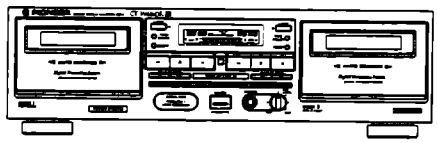
Service Manual

PIONEER
The Art of Entertainment



• The above illustration shows CT-W616DR.

ORDER NO.
RRV1730

STEREO DOUBLE CASSETTE DECK

CT-W616DR
CT-W606DR

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	Remarks
	CT-W616DR	CT-W606DR		
KUXJ	○	○	AC120V	
KCXJ	○	—	AC120V	

CONTENTS

1. SAFETY INFORMATION 2
2. EXPLODED VIEWS AND PARTS LIST 3
3. SCHEMATIC DIAGRAM 10
4. PCB CONNECTION DIAGRAM 20
5. PCB PARTS LIST 27
6. ADJUSTMENT 30
7. GENERAL INFORMATION 34
   7.1 PARTS 34
      7.1.1 IC 34
      7.1.2 DISPLAY 38
   7.2 TEST MODE 39
   7.3 BLOCK DIAGRAM 42
8. PANEL FACILITIES AND SPECIFICATIONS 43

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE, INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V. Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 501 Orchard Road, #10-00 Lane Crawford Place, Singapore 0923

© **PIONEER ELECTRONIC CORPORATION 1996**

T-KZR DEC. 1996 Printed in Japan

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).

When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

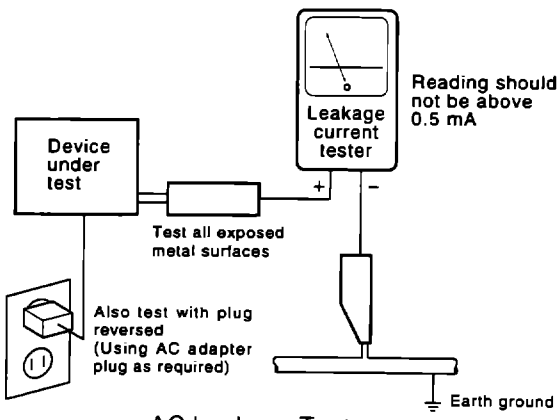
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.


Leakage current tester
Reading should not be above 0.5 mA
Device under test
+
-
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage , etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

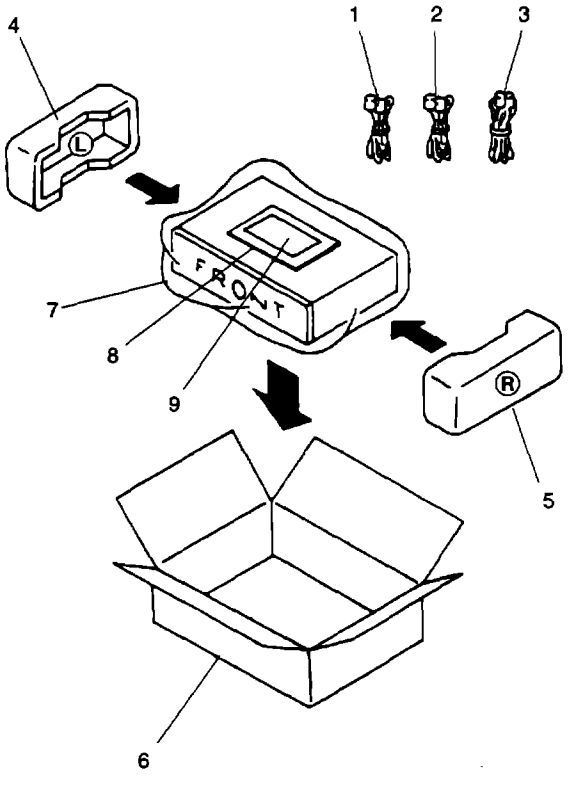
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEWS AND PARTS LIST

NOTES : ● *Parts marked by "* NSP *" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
● *Screw adjacent to ▼ mark on the product are used for disassembly.*

2.1 PACKING



(1) Parts List

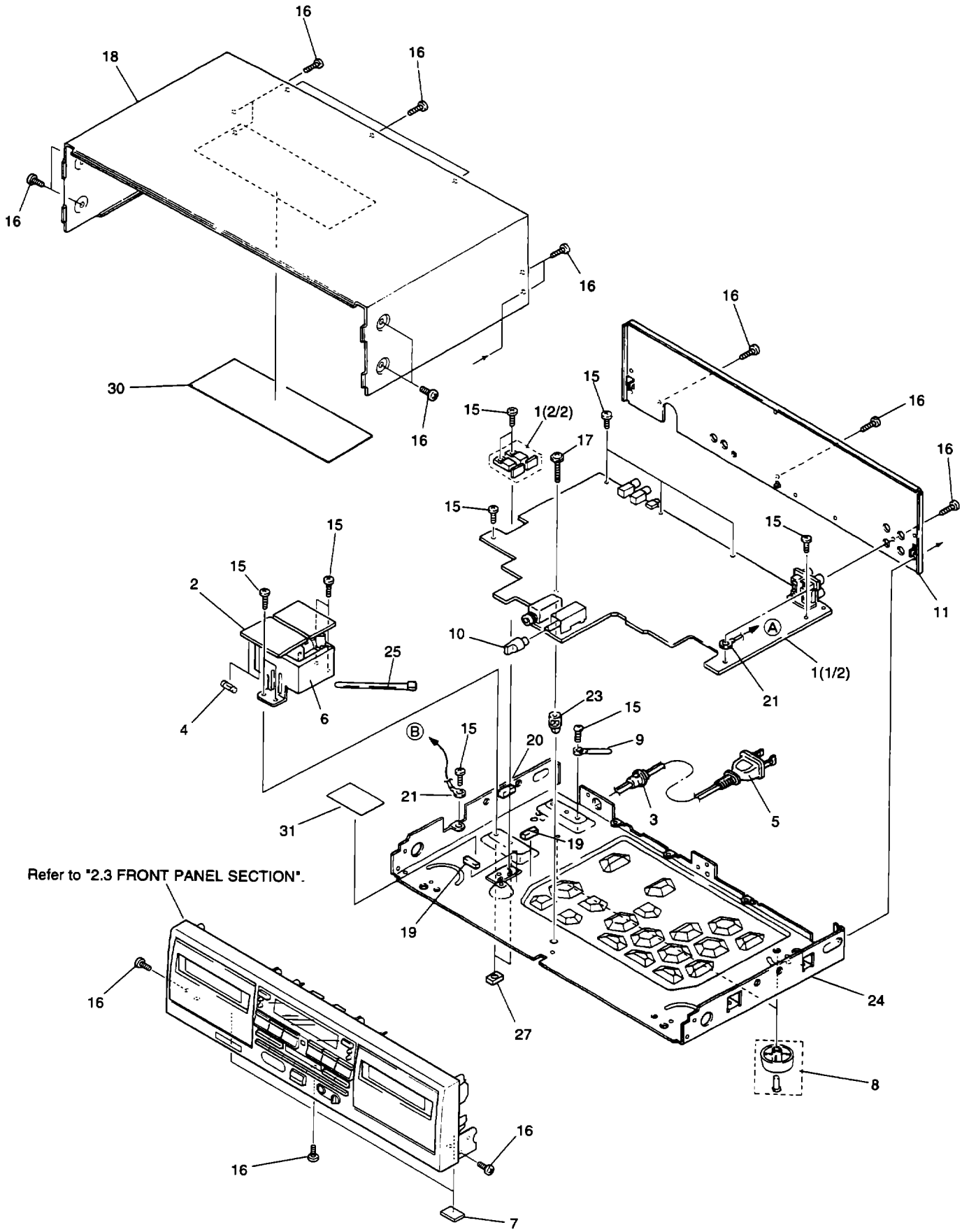
Mark	No.	Description	Parts No.
	1	CONNECTION CORD WITH PIN PLUGS (L=0.9 m)	RDE1036
	2	REMOTE CONTROL CORD (L=1.0 m)	PDE1267
	3	CD · DECK SYNCHRO CONTROL CORD (L=0.9 m)	RDE1044
	4	PAD L	RHA1115
	5	PAD R	RHA1116
	6	PACKING CASE	See Contrast table (2)
	7	SEAT (750×600×0.5)	Z23-007
	8	OPERATING INSTRUCTIONS (English)	See Contrast table (2)
NSP	9	WARRANTY CARD	See Contrast table (2)

(2) Contrast Table

CT-W616DR/KUXJ, KCXJ and CT-W606DR/KUXJ have the same construction except for the following:

Mark	No.	Description	Part No.			Remarks
			CT-W616DR		CT-W606DR	
			KUXJ	KCXJ	KUXJ	
	6	Packing Case	RHG1804	RHG1804	RHG1794	
	8	Operating Instructions (English)	RRB1176	Not used	RRB1176	
	8	Operating Instructions (English/French)	Not used	RRE1148	Not used	
NSP	9	Warranty Card	ARY1051	ARY1075	ARY1051	

2.2 EXTERIOR


16
18
16
16
16
30
16
15
1(2/2)
17
16
16
15
15
16
15
15
2
15
10
25
1(1/2)
11
21
4
6
23
15
B
15
20
9
21
3
5
31
19
Refer to "2.3 FRONT PANEL SECTION".
19
24
16
27
8
16
16
7

(1) Parts List

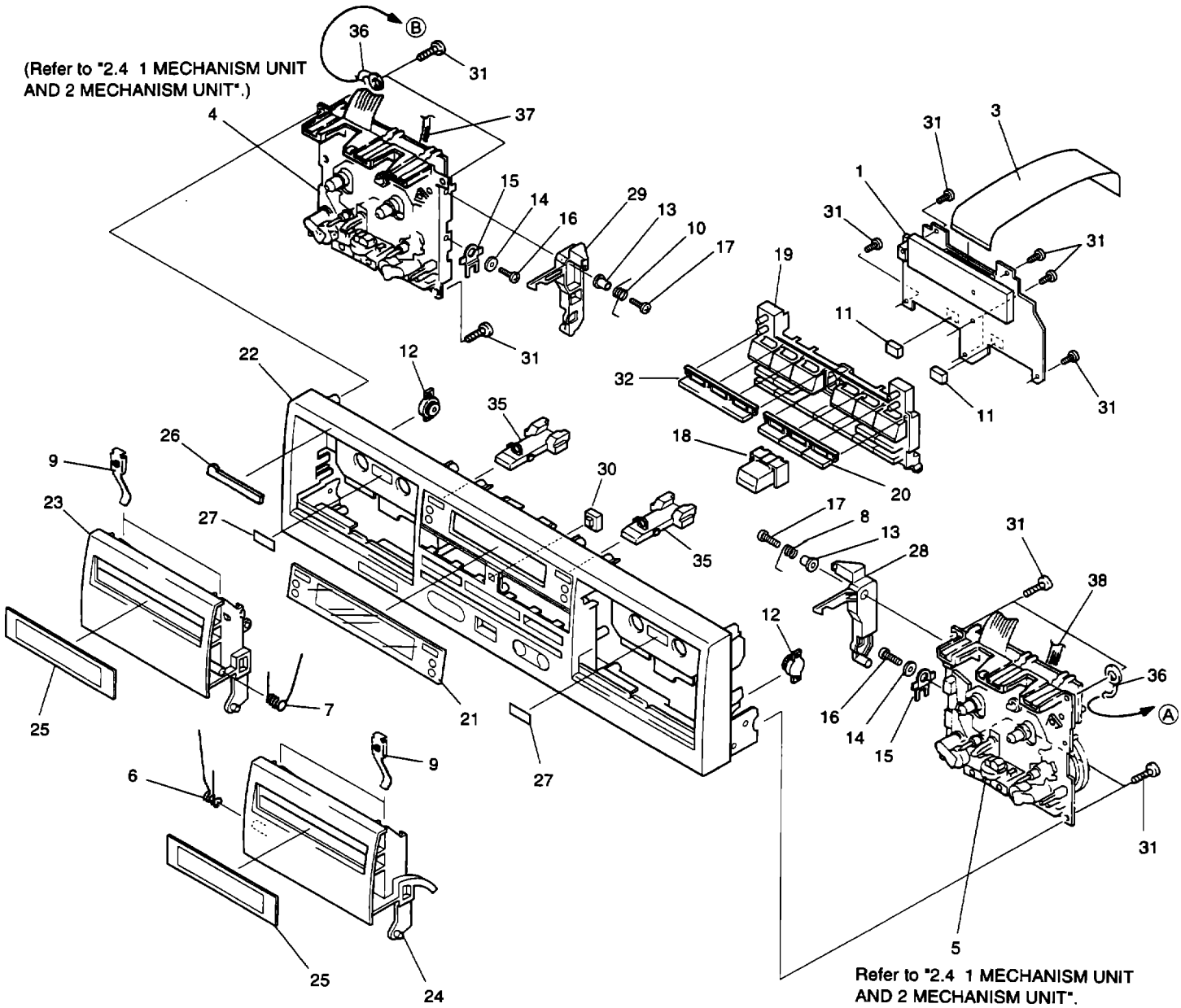
Mark	No.	Description	Parts No.
	1	MAIN UNIT	See Contrast table (2)
NSP	2	TRANS UNIT	RWZ4115
⚠	3	STRAIN RELIEF	CM-22C
⚠	4	FUSE (1.5A/250V,FU1001,FU1002)	REK1059
⚠	5	AC POWER CORD	PDG1015
⚠	6	POWER TRANSFORMER	RTT1333
	7	SHEET RUBBER	AEB1111
	8	FOOT ASSY	AEC1531
	9	CORD HOLDER	RNH-184
	10	ROTARY KNOB	RAC1903
	11	REAR PANEL	See Contrast table (2)
	12	.....	
	13	.....	
	14	.....	
	15	SCREW	BBZ30P060FMC
	16	SCREW	BBZ30P080FZK
	17	SCREW	IBZ30P150FCC
	18	BONNET CASE	REA1254
NSP	19	SPACER (CR)	REB1267
	20	SPACER	REB1171
NSP	21	EARTH LEAD WIRE	DE010VFO
	22	.....	
NSP	23	PCB SPACER	PNY-404
NSP	24	MAIN CHASSIS	RNB1091
NSP	25	BINDER	ZCA-T18S
	26	.....	
	27	DISC GUARD	PNM1245
	28	.....	
	29	.....	
	30	65 LABEL	See Contrast table (2)
NSP	31	FUSE CAUTION LABEL	RRW-111

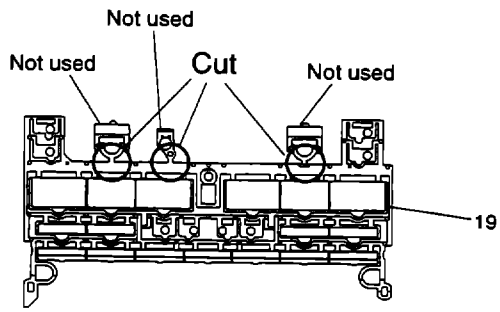
(2) Contrast Table

CT-W616DR/KUXJ, KCXJ and CT-W606DR/KUXJ have the same construction except for the following:

Mark	No.	Description	Part No.			Remarks
			CT-W616DR		CT-W606DR	
			KUXJ	KCXJ	KUXJ	
	1	MAIN Unit	RWZ4106	RWZ4106	RWZ4103	
	11	Rear Panel	RNA2149	RNA2149	RNA2135	
	30	65 Label	ORW1069	Not used	ORW1069	

2.3 FRONT PANEL SECTION





(1) Parts List

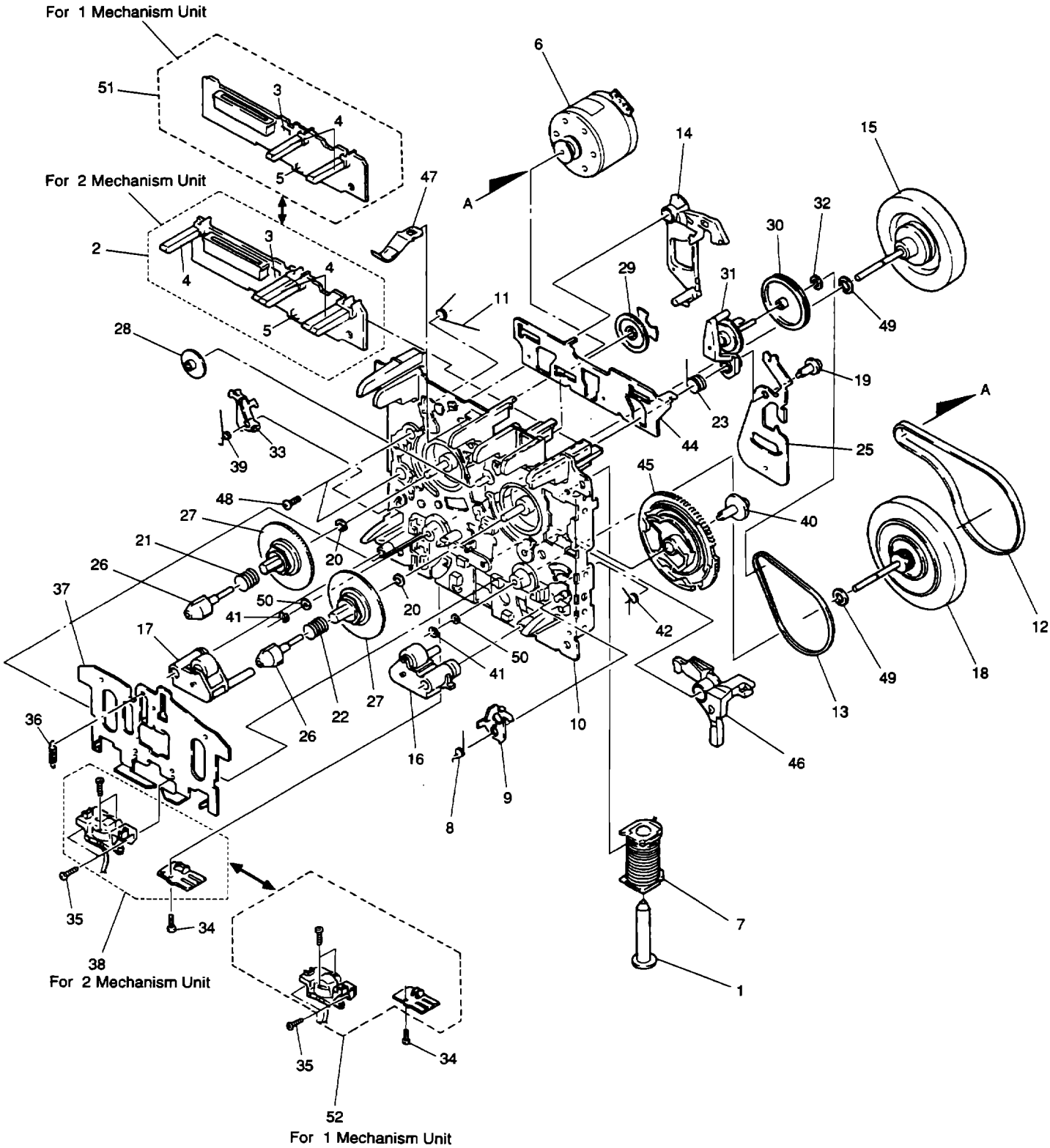
Mark	No.	Description	Parts No.
	1	SUBB UNIT	See Contrast table (2)
	2	.....	
	3	LEAD CARD 33P	RDD1372
	4	1 MECHANISM UNIT (P)	RYM1261
	5	2 MECHANISM UNIT (R/P)	PYM1262
	6	DOOR SPRING L	RBH1304
	7	DOOR SPRING R	RBH1305
	8	EJECT SPRING L	RBH1441
	9	HALF PRESSURE SPRING	RBK1004
	10	EJECT SPRING R	RBH1442
	11	KNOB SPACER	See Contrast table (2)
	12	DAMPER ASSY	REC1267
	13	EJECT COLLAR	RLA1283
	14	ARM COLLAR	RLA1290
	15	EJECT ARM	RNE1909
	16	SCREW	BCZ26P050FMC
	17	SCREW	BSZ26P120FMC
	18	POWER BUTTON S	RAC2159
	19	FUNCTION BUTTON A	See Contrast table (2)
	20	FUNCTION BUTTON B	RAC2173
	21	FL LENS	RAH2808
	22	FRONT PANEL	See Contrast table (2)
	23	DOOR POCKET L	RAH2792
	24	DOOR POCKET R	RAH2793
	25	DOOR LENS	RAH2782
	26	NAME PLATE	PAM1608
	27	REMAIN DISPLAY PAPER	REE-113
	28	EJECT LEVER L	RNK2246
	29	EJECT LEVER R	RNK2247
	30	INDICATOR LENS	RAC2157
	31	SCREW	BBZ30P080FZK
	32	FUNCTION BUTTON C	RAC2154
	33	.....	
	34	.....	
	35	EJECT BUTTON	REA2158
NSP	36	EARTH LEAD WIRE	DE010VFO
	37	CONNECTOR ASSY 3P	RKP1678
	38	CONNECTOR ASSY 5P	RKP1677

(2) Contrast Table

CT-W616DR/KUXJ, KCXJ and CT-W606DR/KUXJ have the same construction except for the following:

Mark	No.	Description	Part No.			Remarks
			CT-W616DR		CT-W606DR	
			KUXJ	KCXJ	KUXJ	
	1	SUBB Unit	RWZ4107	RWZ4107	RWZ4104	
	11	Knob Spacer	Not used	Not used	REC1302	
	19	Function Button A	RAC2172	RAC2172	RAC2174	
	22	Front Panel	RAH2815	RAH2815	RAH2814	

2.4 1 MECHANISM UNIT AND 2 MECHANISM UNIT



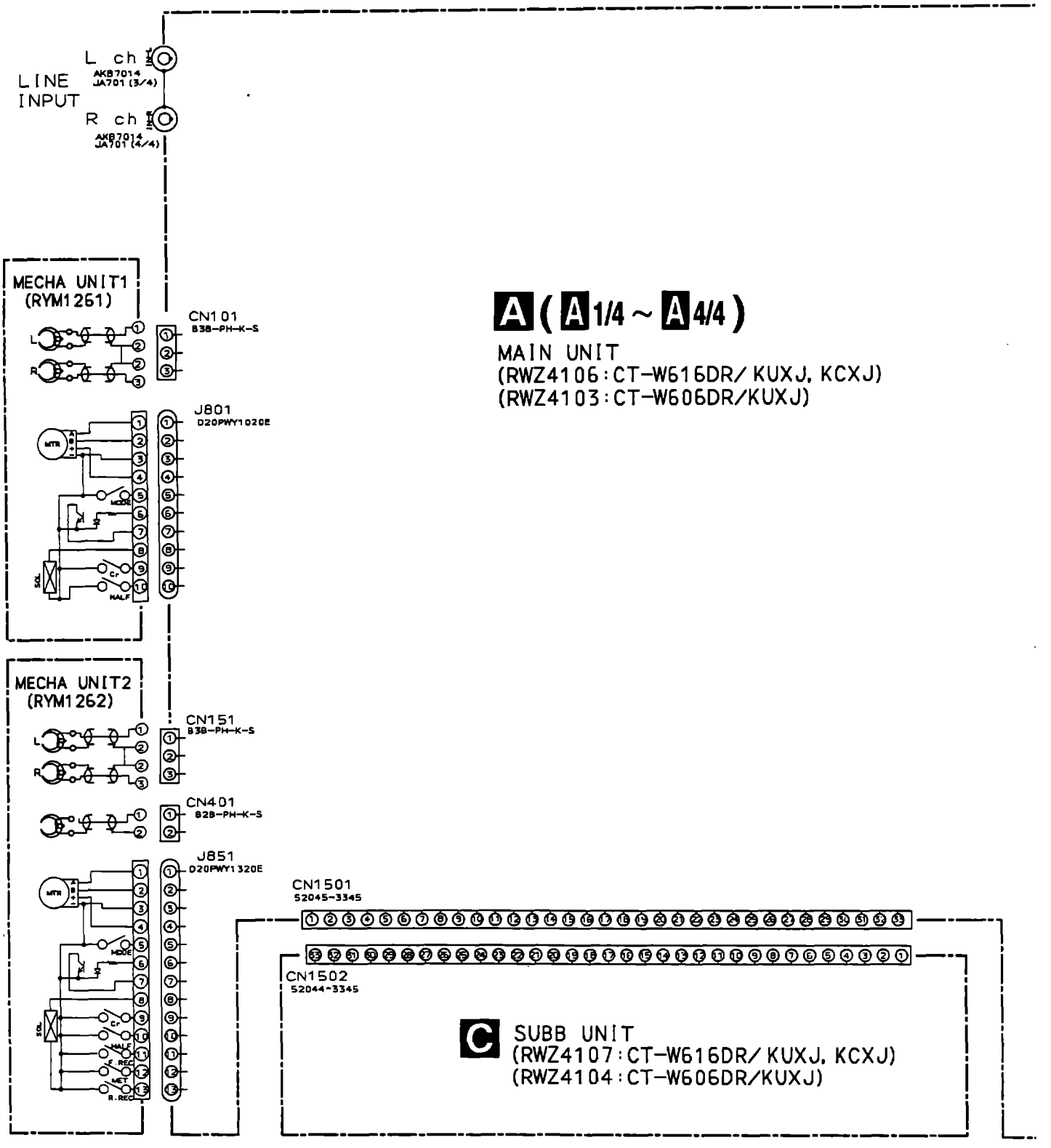
Mark	No.	Description	Parts No.
	1	PLUNGER	RLA1288
	2	PCB CONTROL BLK (For 2 MECHANISM UNIT)	RXA1733
	3	PUSH SWITCH	RSG1018
	4	SPLF	RSN1023
	5	PHOTO-TRANSISTOR	SPI33534FG
	6	MTR MAIN BLK	RXM1075
	7	SOLENOID BLK	RXP1021
	8	SPRING INTERLOCK R	RBH1386
	9	ARM INTERLOCK R	RNE1781
	10	CHASSIS BASE BLK	RXA1626
	11	SPRING BRAKE	RBH1387
	12	MAIN BELT	REB1157
	13	F/R BELT	REB1254
	14	LEVER BRAKE	RNK2071
	15	F/W ASSY	RXA1295
	16	PINCH ROLLER BLK R	RXA1628
	17	PINCH ROLLER BLK L	RXA1629
	18	CLUTCH BLK ASSY	RXA1631
	19	SCREW	RBA1120
	20	WASHER	W41D065D025
	21	SPRING REEL(L)	RBH1388
	22	SPRING REEL(R)	RBH1389
	23	CAM SPRING	RBH1393
	24	.....	
	25	LEVER F/R	RNE1782
	26	REEL FEATHER	RNK2072
	27	REEL BASE	RNK2073
	28	PLAY GEAR(A)	RNK2074
	29	FF GEAR(A)	RNK2075
	30	F/R PULLEY	RNK2076
	31	CLUTCH BLK ASSY	RXA1632
	32	WASHER	WA17D040D025
	33	ARM INTERLOCK L	RNE1780
	34	SCREW	PCZ20P040FMC
	35	SCREW	PMZ20P060FMC
	36	SPRING HB	RBH1390
	37	HEAD BASE	RNE1783
	38	PLATE HD BLK (For 2 MECHANISM UNIT)	RXA1683
	39	SPRING INTERLOCK L	RBH1385
	40	SCREW	RBA1121
	41	STOP RING	YE15FUC
	42	SPRING ARM PLAY	RBH1392
	43	.....	
	44	PLATE SLIDE	RNE1785
	45	CAM GEAR	RNK2078

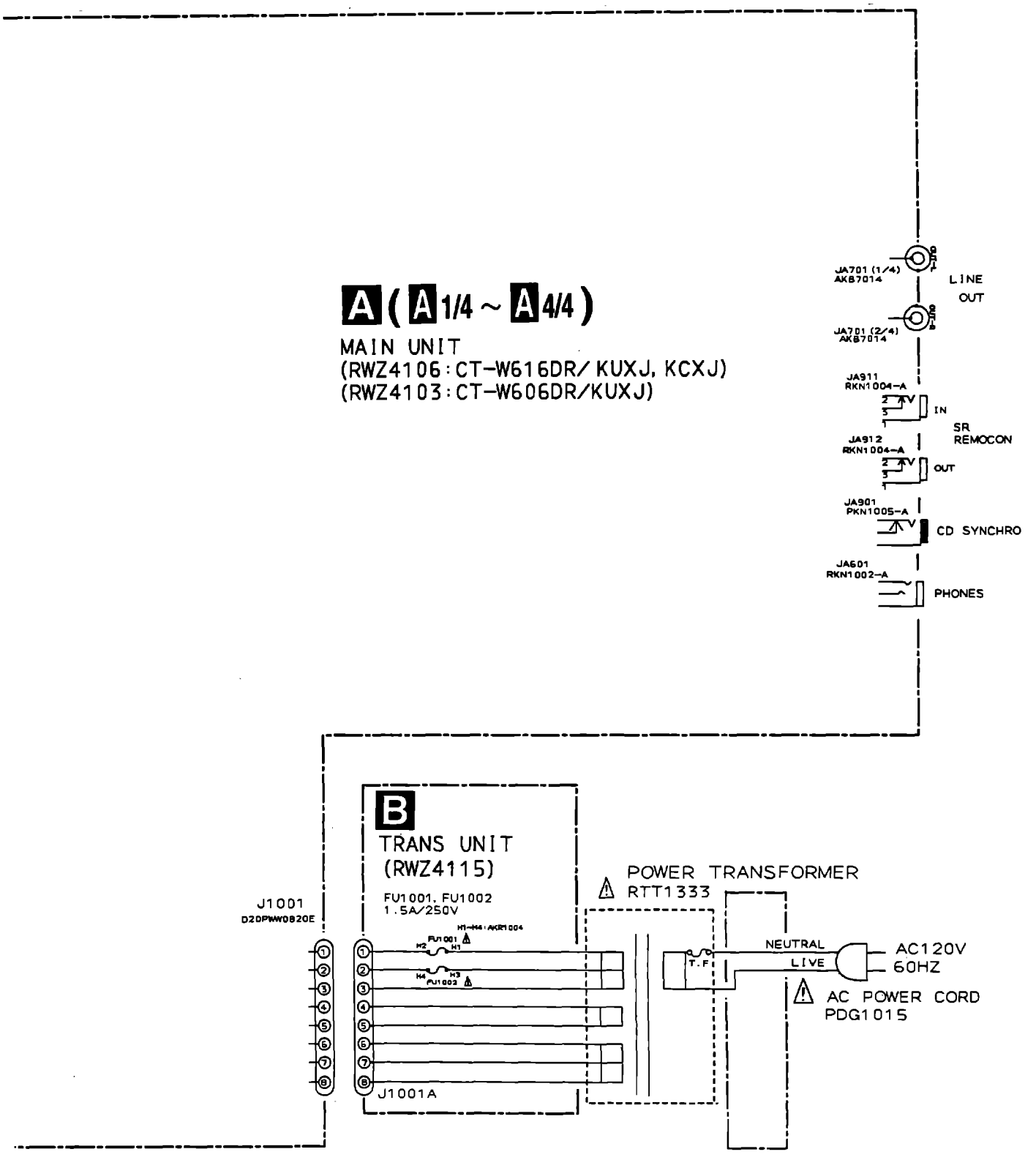
Mark	No.	Description	Parts No.
	46	ARM PLAY	RNK2079
	47	SPRING CASSETTE	RNE1786
	48	SCREW	BMZ26P040FZK
	49	WASHER	WA26D045D025
	50	WASHER	WA26D047D050
	51	PCB CONTROL BLK (For 1 MECHANISM UNIT)	RXA1623
	52	PLATE HD BLK (For 1 MECHANISM UNIT)	RXA1682

3. SCHEMATIC DIAGRAM

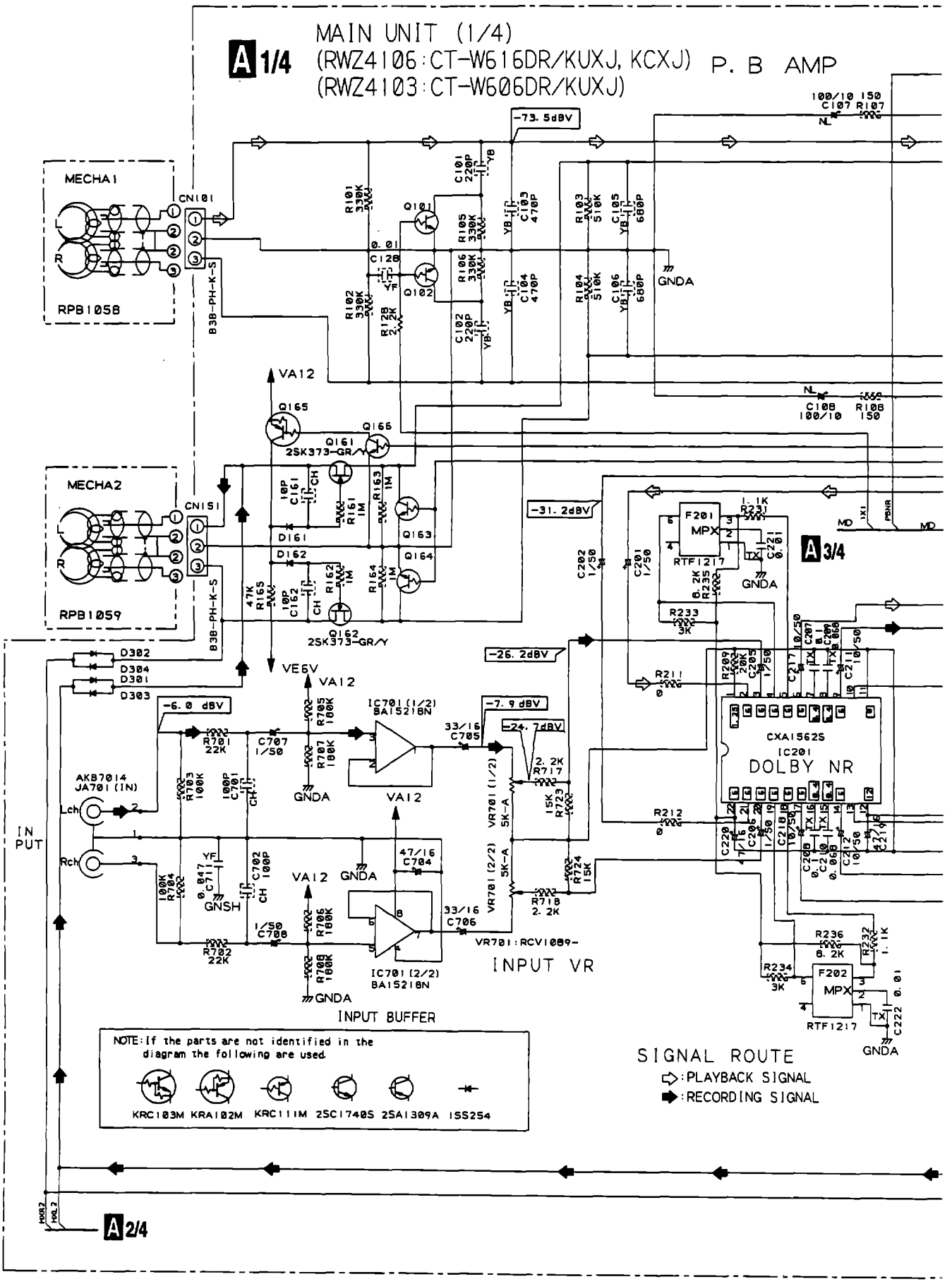
Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "PCB PARTS LIST".

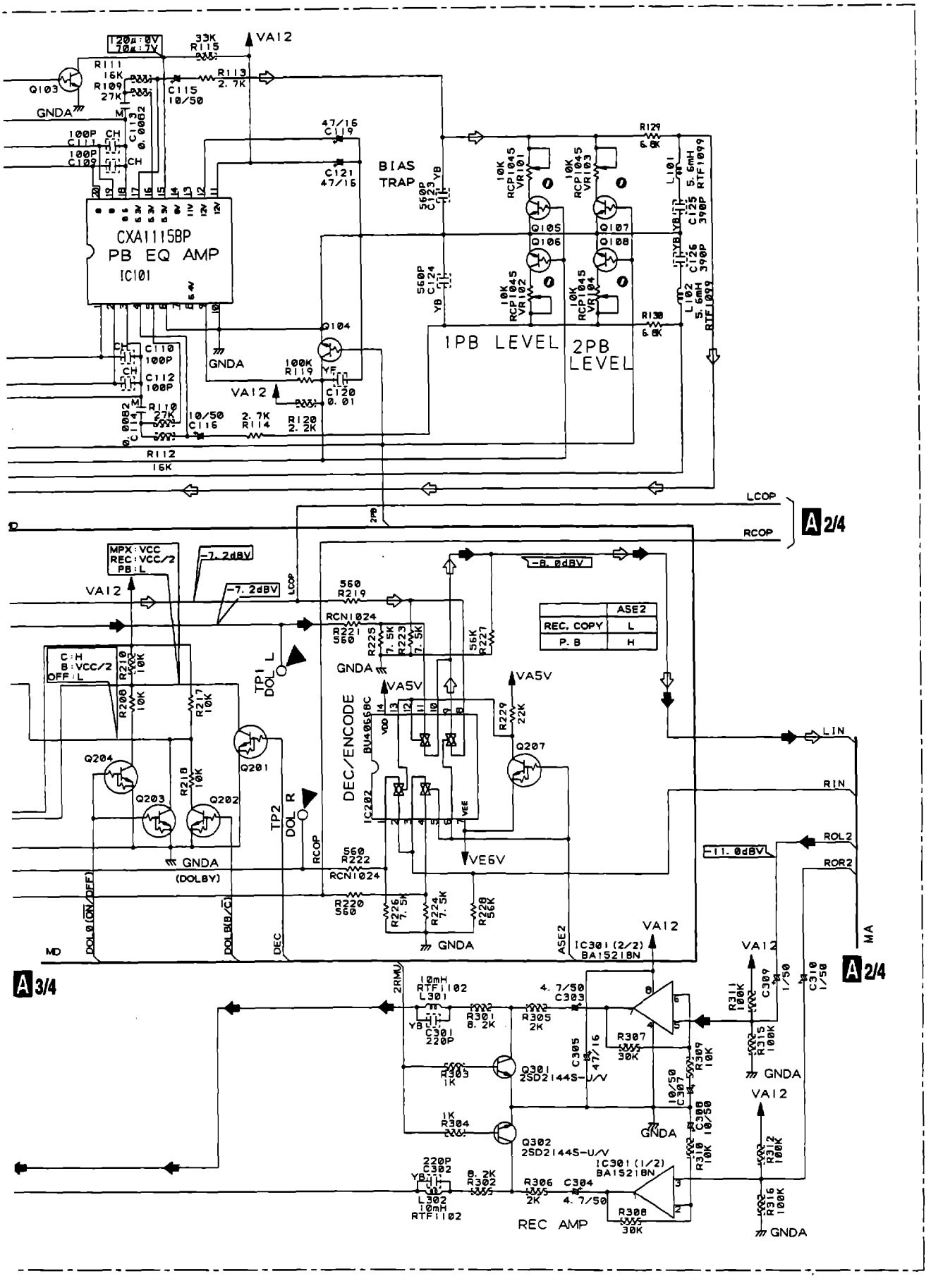
3.1 OVERALL SCHEMATIC DIAGRAM



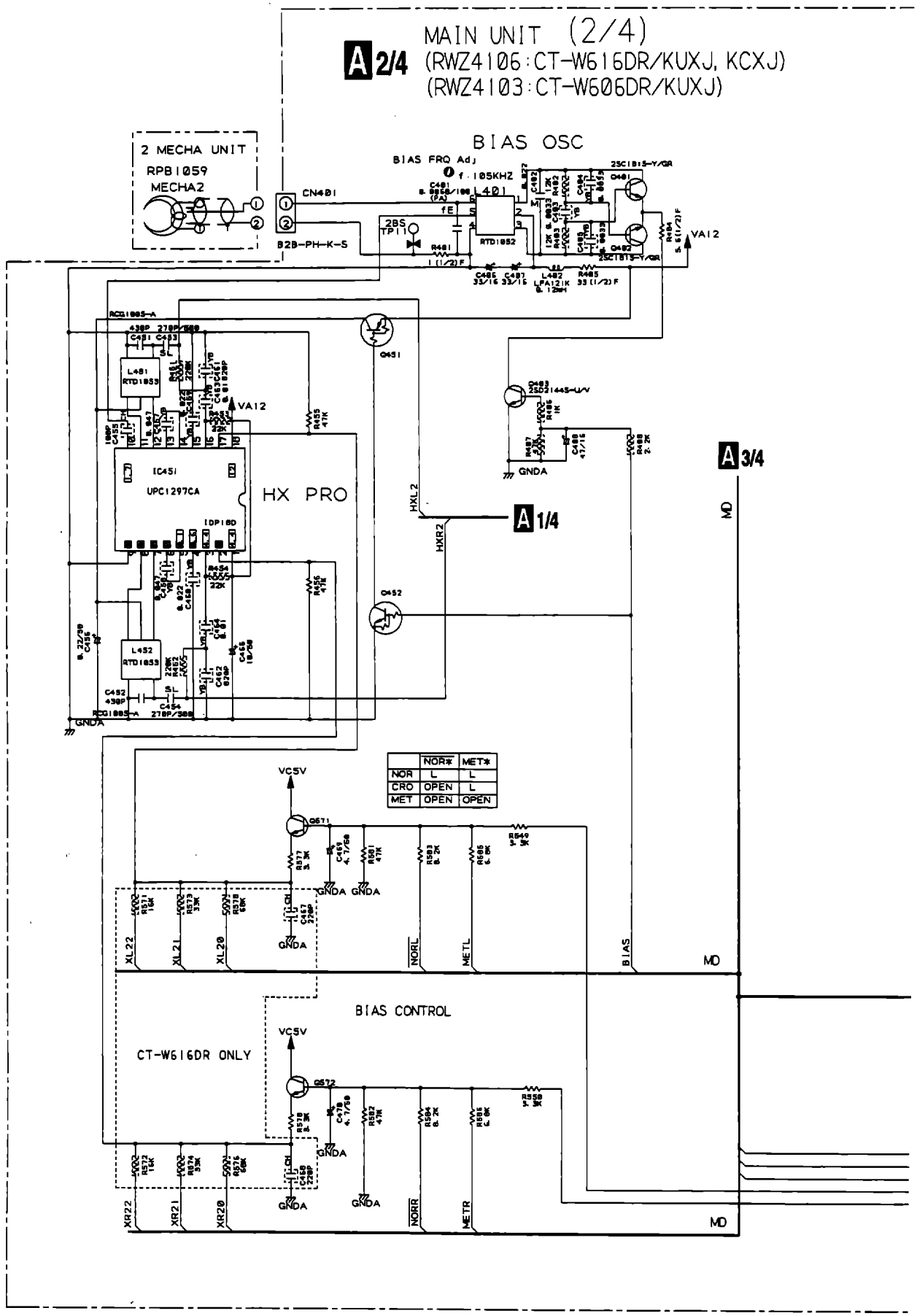

A (A 1/4 ~ A 4/4)
MAIN UNIT
(RWZ4106 : CT-W616DR/ KUXJ, KCXJ)
(RWZ4103 : CT-W606DR/KUXJ)
JA701 (1/4)
AKB7014
LINE
OUT
JA701 (2/4)
AKB7014
JA911
RKN1004-A
IN
SR
REMOCON
JA912
RKN1004-A
OUT
JA901
PKN1005-A
CD SYNCHRO
JA601
RKN1002-A
PHONES
B
TRANS UNIT
(RWZ4115)
FU1001, FU1002
1.5A/250V
J1001
D20PWW0820E
POWER TRANSFORMER
RTT1333
T.F
NEUTRAL
LIVE
AC120V
60HZ
AC POWER CORD
PDG1015
J1001A

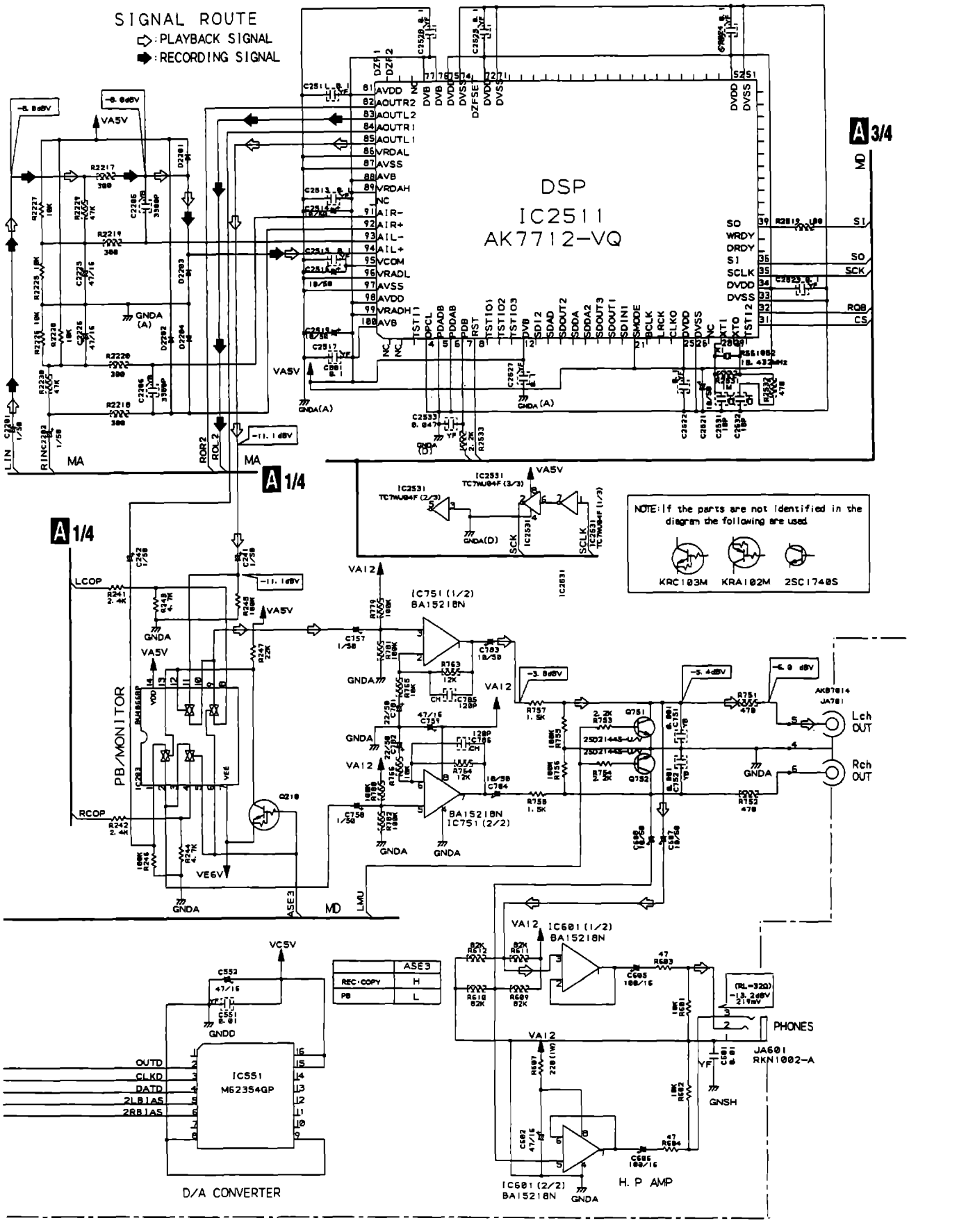
3.2 MAIN UNIT (1/4)



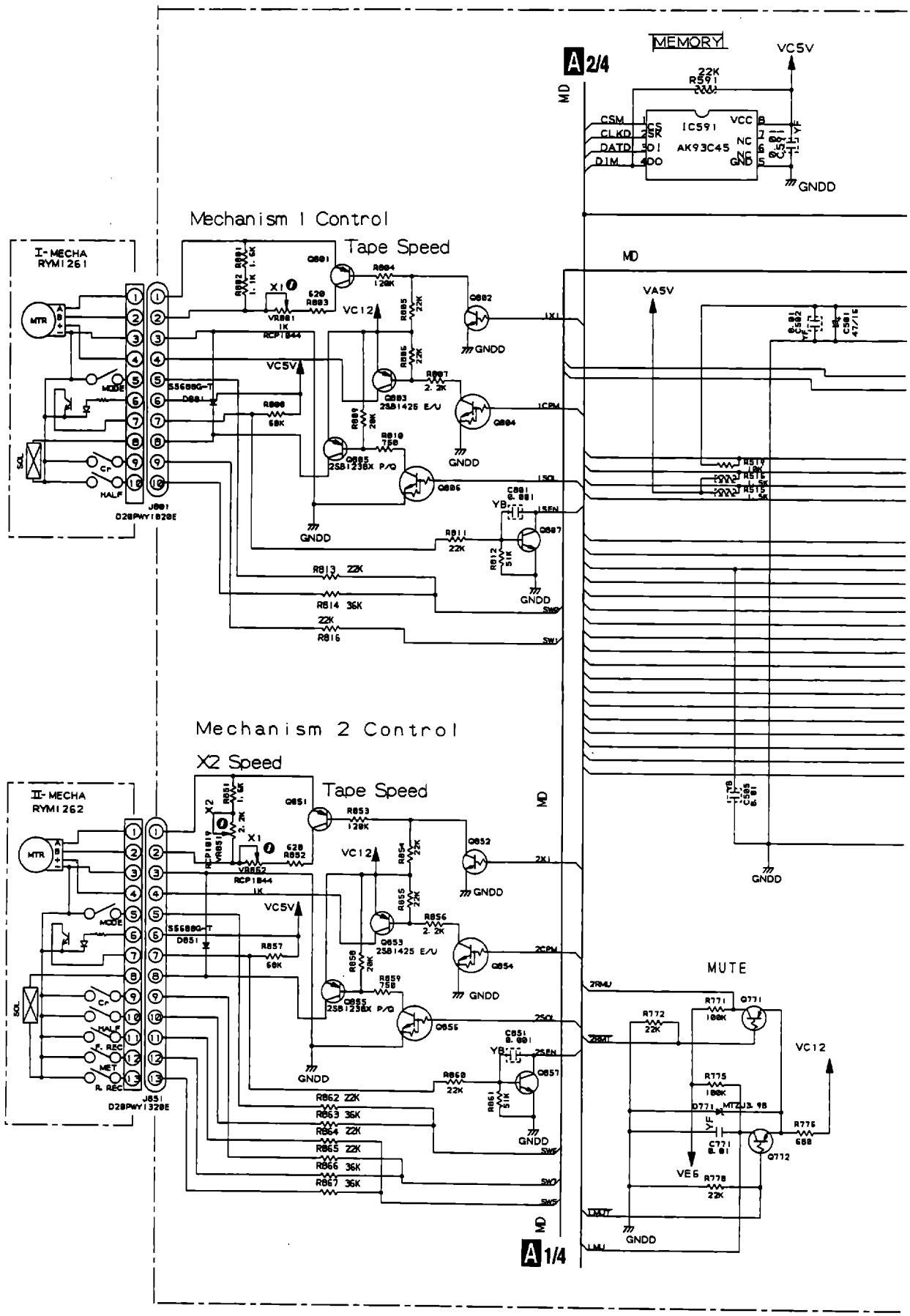

CXA1115BP
PB EQ AMP
IC101
BIAS
TRAP
1PB LEVEL
2PB
LEVEL
VA12
GNDA
VA5V
VE6V
BIAS
DEC/ENCODE
BU4066BC
IC202
IC301 (2/2)
BA15218N
IC301 (1/2)
BA15218N
REC AMP
Q301
2SD2144S-U/V
Q302
2SD2144S-U/V
LCOP
RCOP
LIN
RIN
ROL2
ROR2
MA
MD
DEC
ASE2
REC, COPY
P. B
TP1
DOL L
TP2
DOL R
(DOLBY)
A 2/4
A 3/4
A 1/4

3.3 MAIN UNIT (2/4)



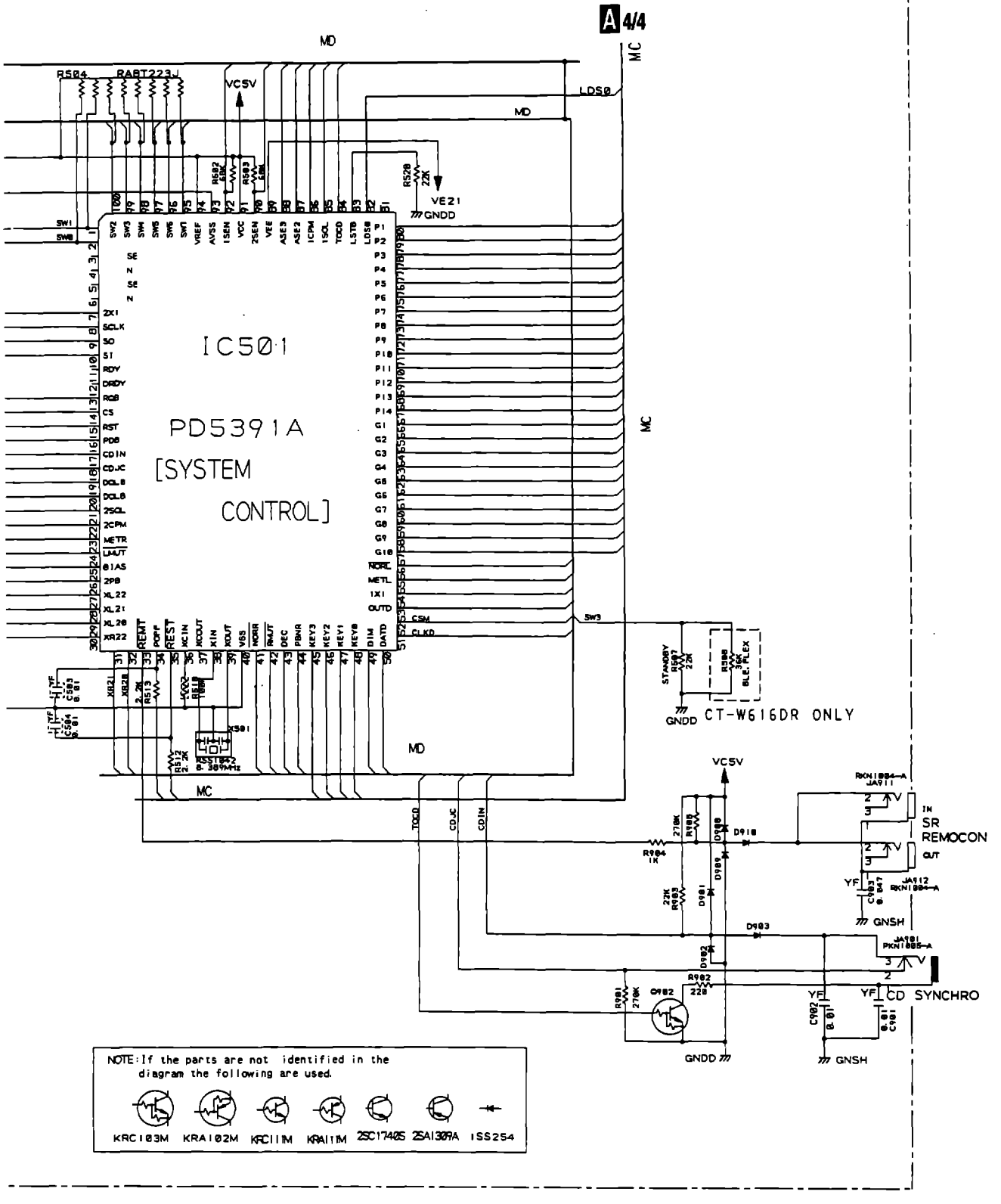

SIGNAL ROUTE
PLAYBACK SIGNAL
RECORDING SIGNAL
DSP
IC2511
AK7712-VQ
A 3/4
A 1/4
A 1/4
A 2/4
NOTE: If the parts are not identified in the diagram the following are used.
KRC103M KRA102M 2SC1740S
PB/MONITOR
D/A CONVERTER
H. P AMP
PHONES
Lch OUT
Rch OUT
IC751 (1/2) BA15218N
IC751 (2/2) BA15218N
IC601 (1/2) BA15218N
IC601 (2/2) BA15218N
ICS51 M62354GP
JA601 RKN1002-A
ASE3
REC·COPY H
PB L

3.4 MAIN UNIT (3/4)



A 3/4 MAIN UNIT (3/4)

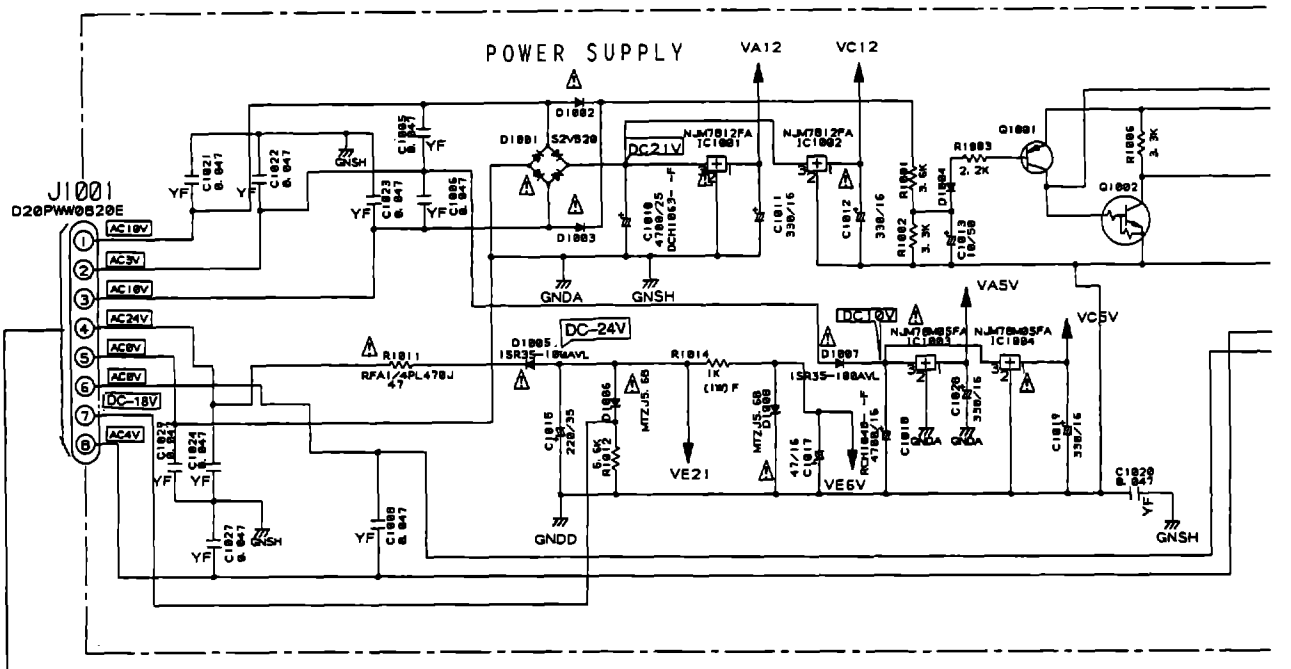
(RWZ4106 : CT-W616DR/KUXJ, KCXJ)
(RWZ4103 : CT-W606DR/KUXJ)



NOTE : If the parts are not identified in the diagram the following are used.

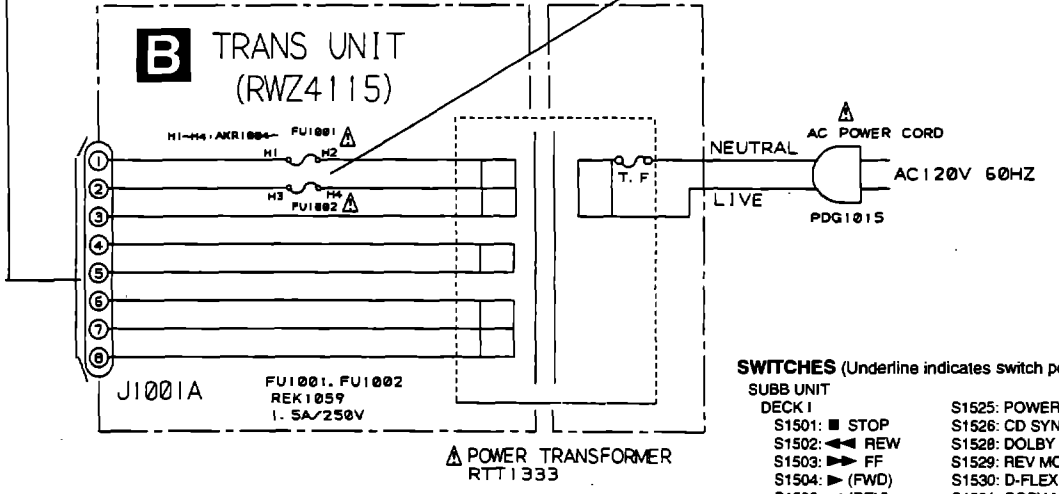
KRC103M KRA102M KRC111M KRA111M 2SC1740S 2SA1309A 1SS254

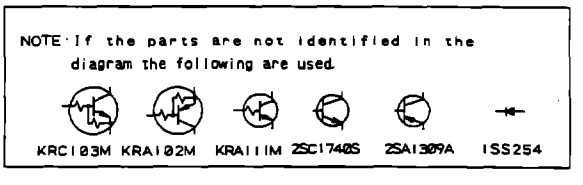
3.5 MAIN UNIT (4/4), TRANS UNIT AND SUBB UNIT



● NOTE FOR FUSE REPLACEMENT

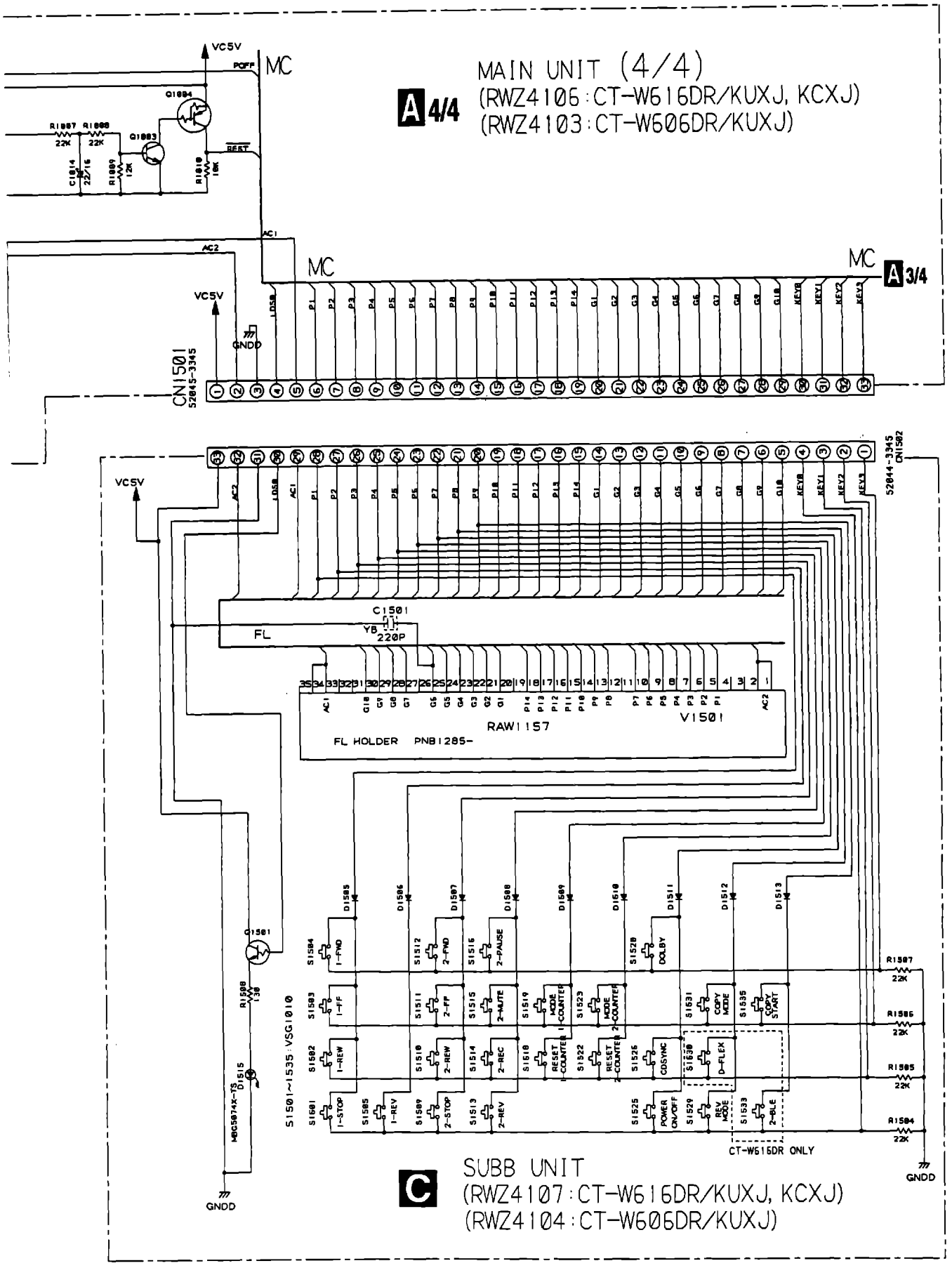
CAUTION-FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATINGS ONLY.



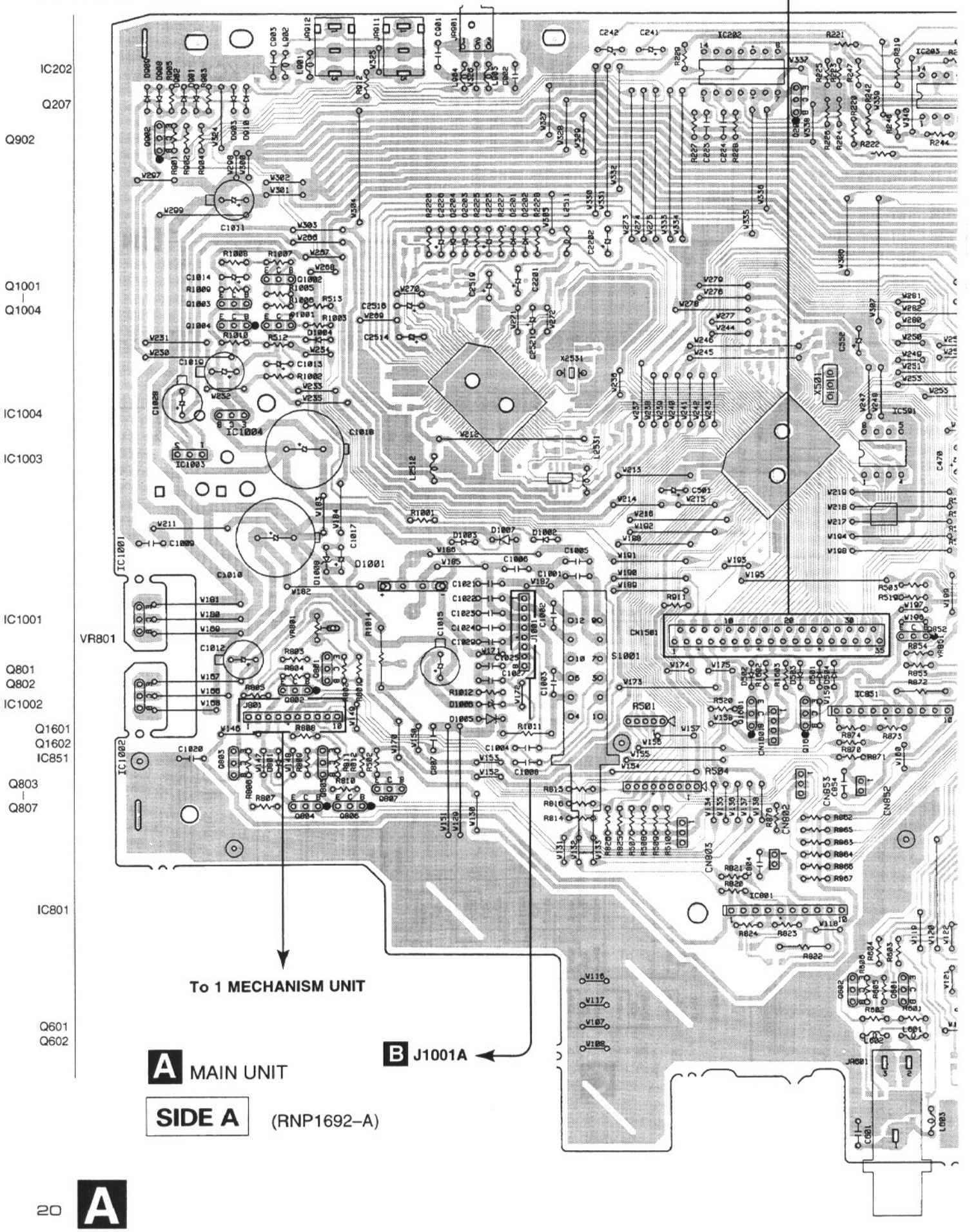


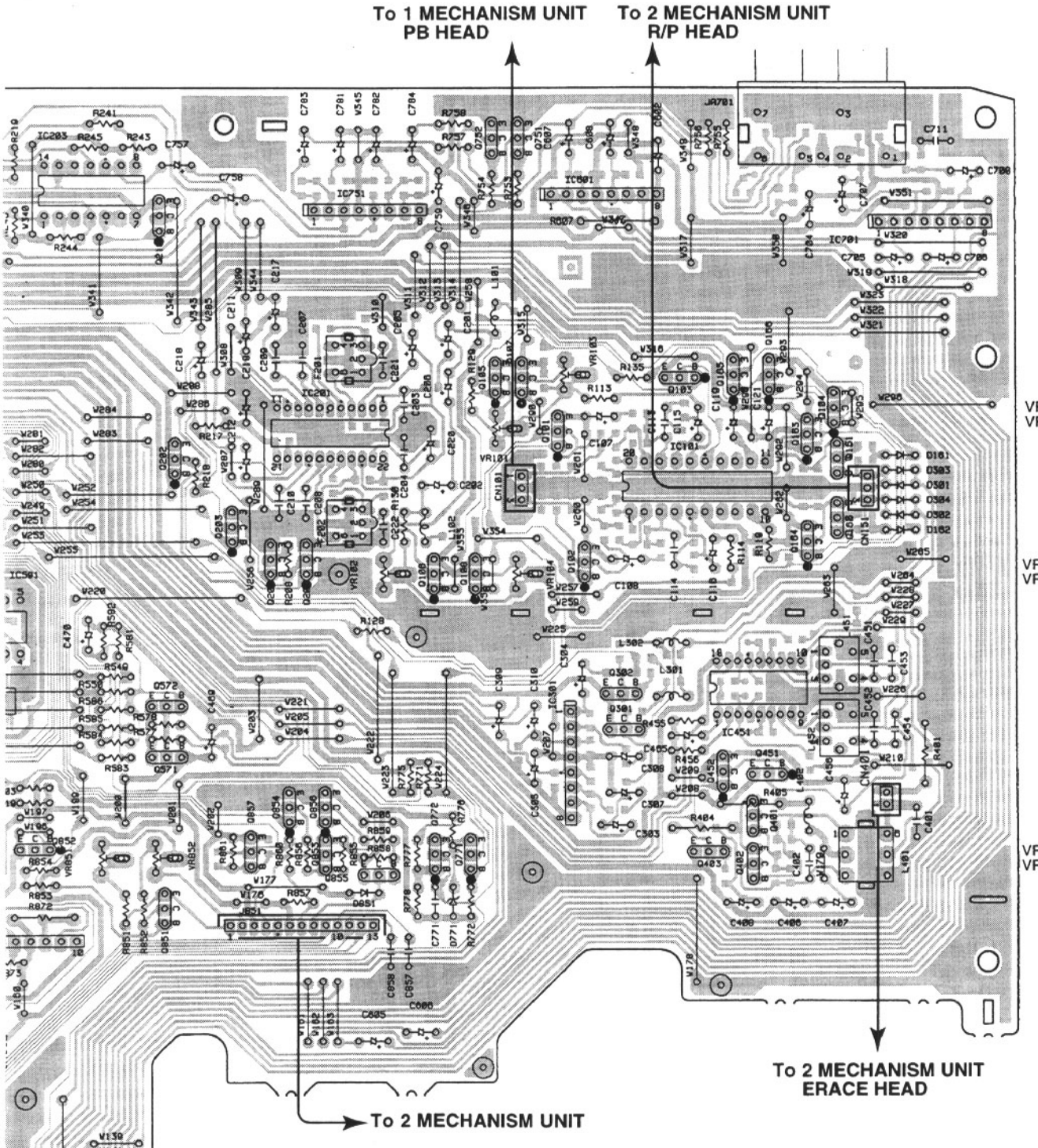
SWITCHES (Underline indicates switch position):

SUBB UNIT
- DECK I
  - S1501: ■ STOP
  - S1502: ◀◀ REW
  - S1503: ▶▶ FF
  - S1504: ▶ (FWD)
  - S1505: ◀ (REV)
- DECK II
  - S1509: ■ STOP
  - S1510: ◀◀ REW
  - S1511: ▶▶ FF
  - S1512: ▶ (FWD)
  - S1513: ◀ (REV)
  - S1514: ● REC
  - S1515: O MUTE
  - S1516: II PAUSE
- DECK I
  - S1518: RESET
  - S1519: TIME/COUNT
- DECK II
  - S1522: RESET
  - S1523: TIME/COUNT
- S1525: POWER/STANDBY/ON
- S1526: CD SYNC
- S1528: DOLBY NR
- S1529: REV MODE
- S1530: D-FLEX (CT-W616DR ONLY)
- S1531: COPY MODE
- S1533: 2-BLE (CT-W616DR ONLY)
- S1535: COPY START


MAIN UNIT (4/4)
(RWZ4106 : CT-W616DR/KUXJ, KCXJ)
(RWZ4103 : CT-W606DR/KUXJ)
A 4/4
VC5V
MC
POFF
Q1884
Q1883
R1887 22K
R1888 22K
C1814 22/16
R1889 12K
R1810 10K
REST
AC1
AC2
A 3/4
CN1501
52045-3345
GNDD
LOSB
P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14
G1 G2 G3 G4 G5 G6 G7 G8 G9 G10
KEY3 KEY2 KEY1 KEY0
CN1502
52044-3345
C1501
YB 220P
FL
RAW1157
FL HOLDER PNB1285-
V1501
Q1501
R1508 130
MRG5074X-TS
D1515
S1501~1535 VSG1010
D1585 D1586 D1587 D1588 D1589 D1610 D1511 D1512 D1513
S1584 1-FWD
S1512 2-FWD
S1516 2-PAUSE
S1528 DOLBY
S1583 1-FF
S1511 2-FF
S1515 2-MUTE
S1519 MODE 1-COUNTER
S1523 MODE 2-COUNTER
S1531 COPY MODE
S1535 COPY START
S1582 1-REW
S1510 2-REW
S1514 2-REC
S1518 RESET 1-COUNTER
S1522 RESET 2-COUNTER
S1526 CDSYNC
S1530 D-FLEX
S1601 1-STOP
S1585 1-REV
S1509 2-STOP
S1513 2-REV
S1525 POWER ON/OFF
S1529 REV MODE
S1533 2-PLE
R1507 22K
R1506 22K
R1505 22K
R1504 22K
CT-W616DR ONLY
GNDD
C
SUBB UNIT
(RWZ4107 : CT-W616DR/KUXJ, KCXJ)
(RWZ4104 : CT-W606DR/KUXJ)

CT-W616DR, CT-W606DR
4. PCB CONNECTION DIAGRAM
4.1 MAIN UNIT





Q751
Q752
IC203 IC601
IC751
Q210 IC701
VR101 IC201 Q105
VR103 Q107
Q201 Q103
Q104
Q204 Q101
Q106 IC101
Q108 Q161
Q166
VR102 Q102
VR104
Q571 IC301
Q572 Q302
Q301
IC451
Q451
Q452
Q401
VR851 Q851 Q403
VR852
Q857
Q771
Q772
IC702
VR701

NOTE FOR PCB DIAGRAMS:

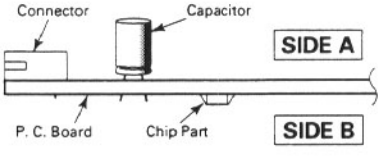
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor

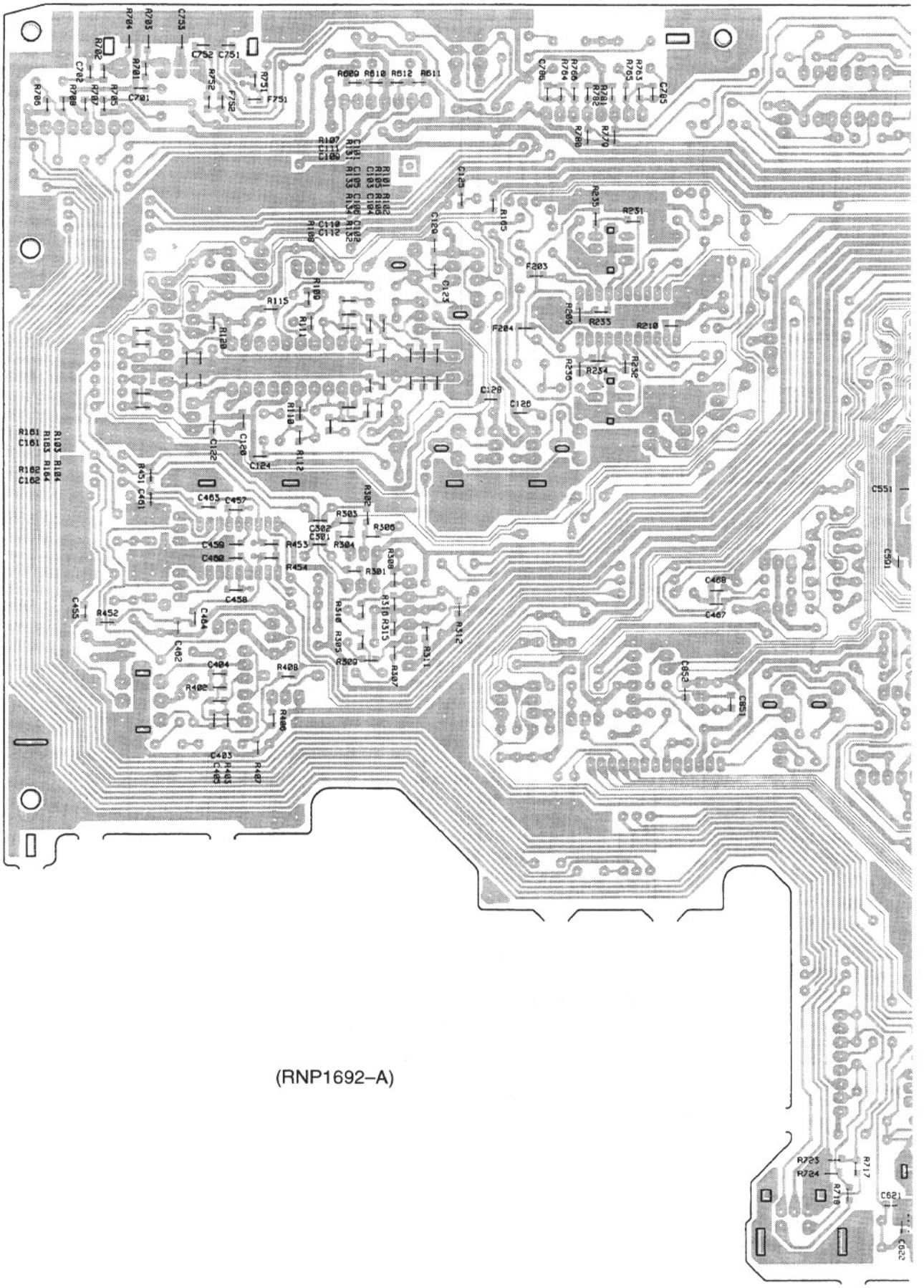
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
		Resistor array
		3-terminal regulator

3. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.

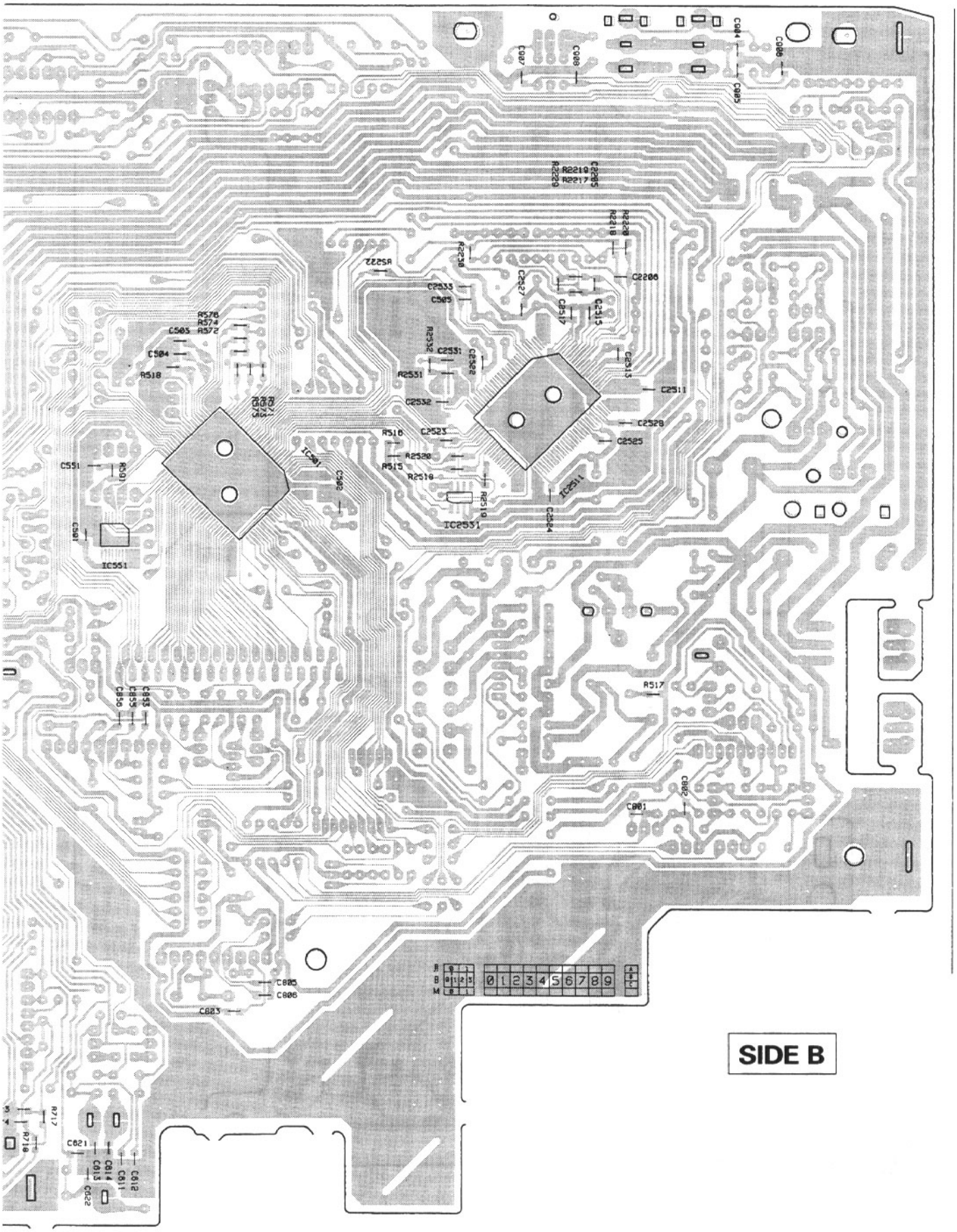
4. Viewpoint of PCB diagrams



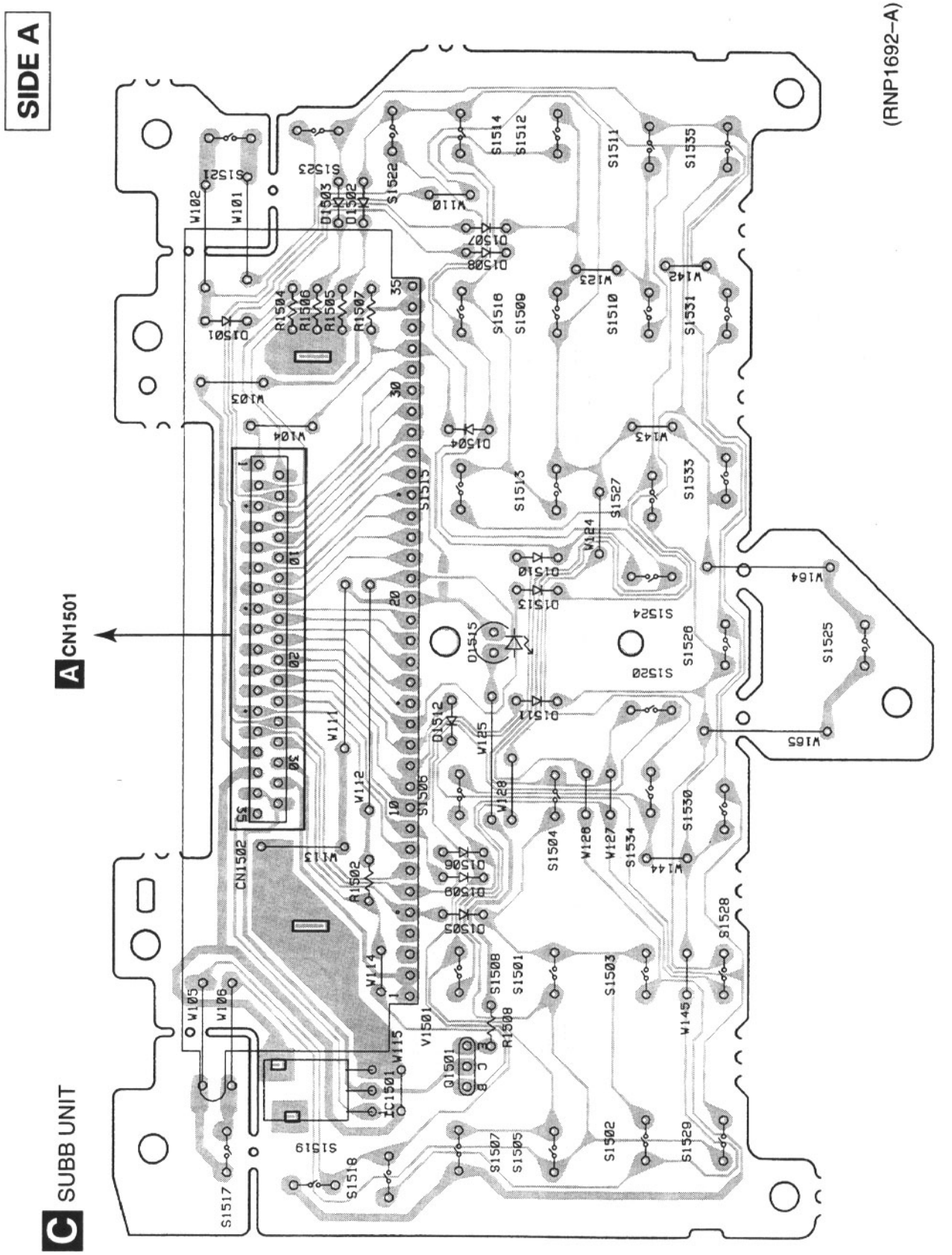
A MAIN UNIT



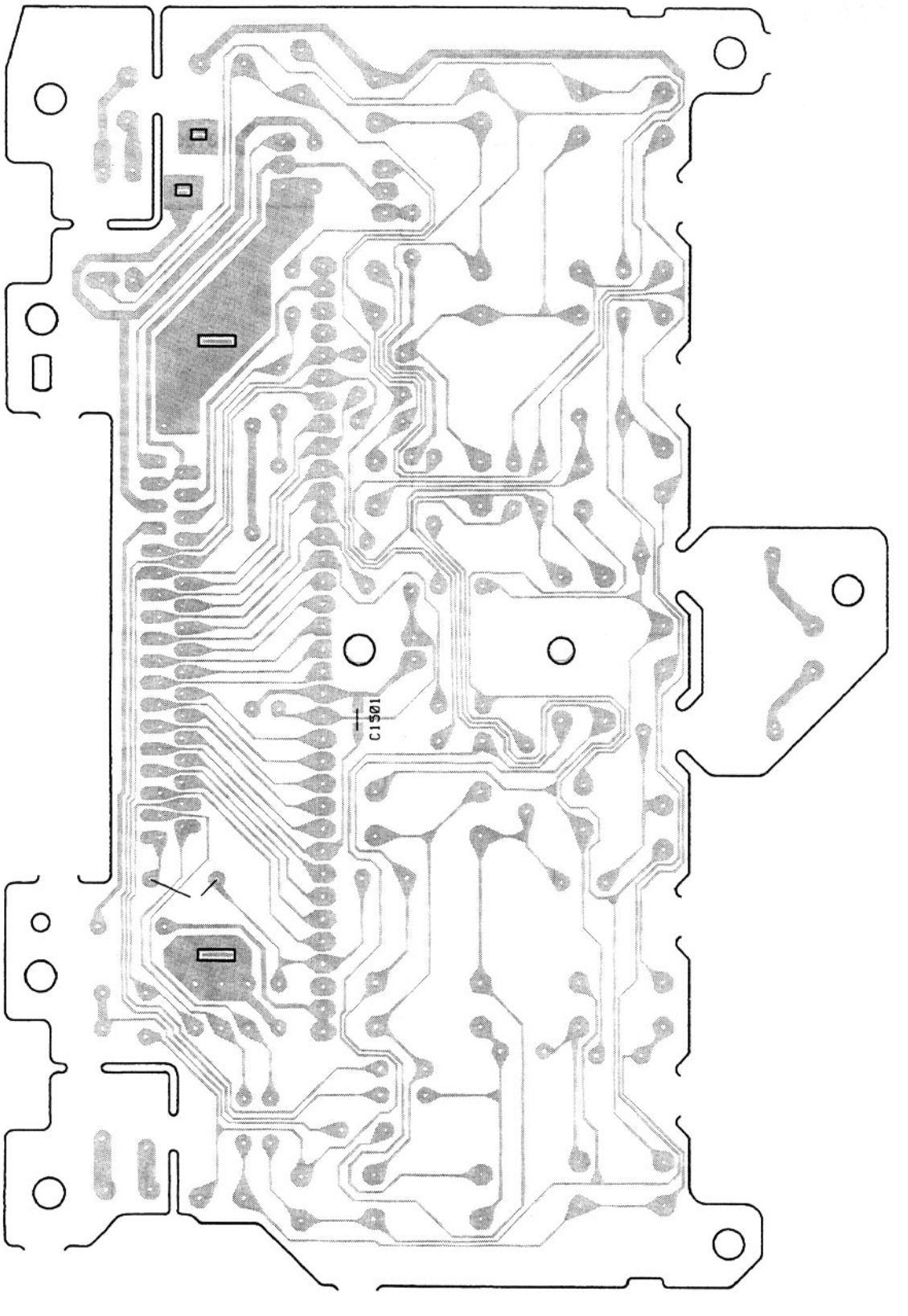
(RNP1692–A)


IC2511
IC501
IC2531
IC551
SIDE B

4.2 SUBB UNIT

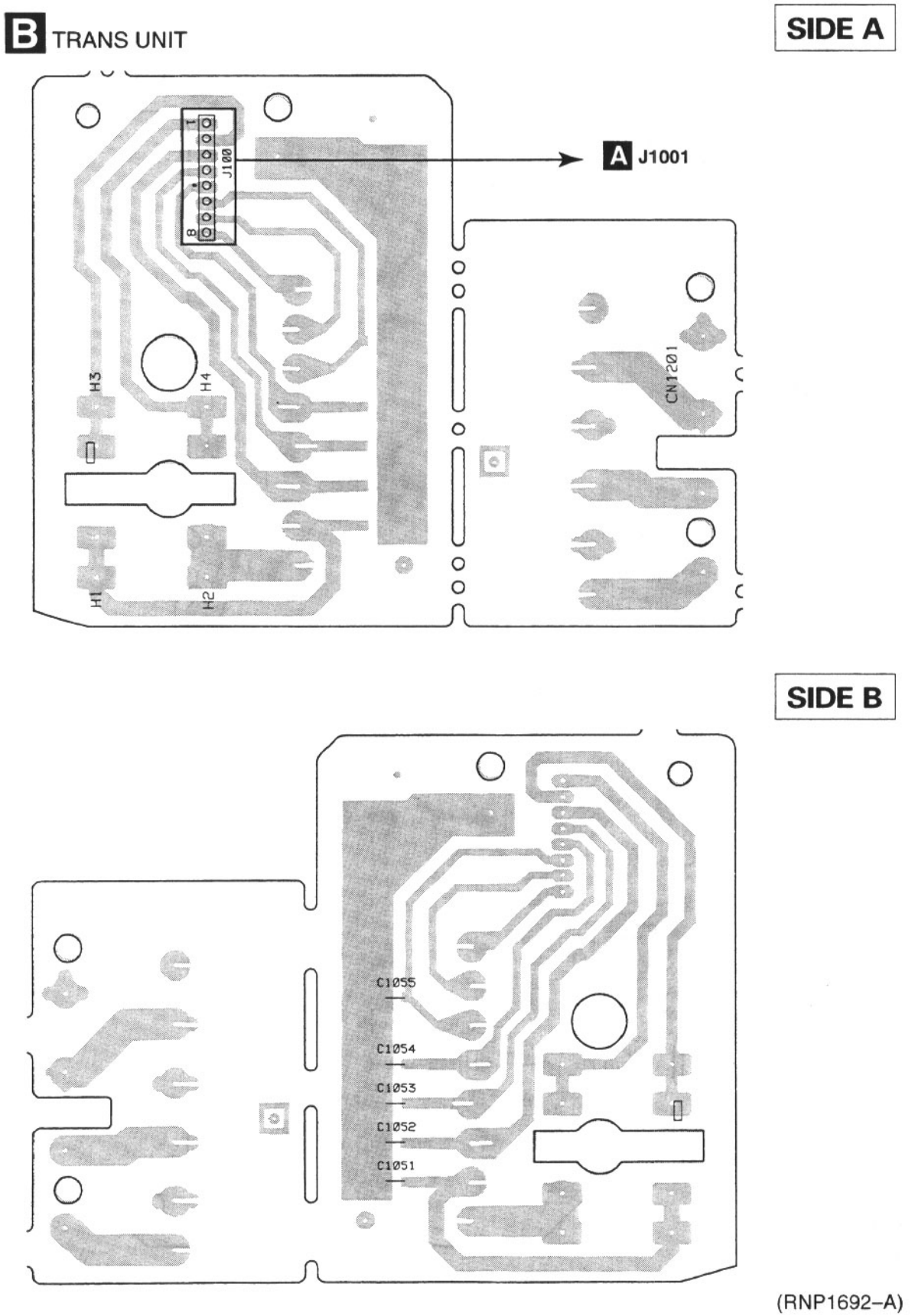


SIDE B



C SUBB UNIT

4.3 TRANS UNIT



(RNP1692–A)

5. PCB PARTS LIST

NOTES : ● *Parts marked by "* NSP *" are generally unavailable because they are not in our Master Spare Parts List.*

● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

● *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56 x 10¹ = 561 ..... RD1/4PU 5 6 1 J

47kΩ → 47 x 10³ = 473 ..... RD1/4PU 4 7 3 J

0.5Ω → R50 ..... RN2H R 5 0 K

1Ω → 1R0 ..... RS1P 1 R 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ → 562 x 10¹ = 5621 ..... RN1/4PC 5 6 2 1 F

■ LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol & Description	Part No.			Remarks
		CT-W616DR/KUXJ	CT-W616DR/KCXJ	CT-W606DR/KUXJ	
NSP	MOTHER Unit	RWM1998	RWM1998	RWM1989	
	├ MAIN Unit	RWZ4106	RWZ4106	RWZ4103	
	├ SUBB Unit	RWZ4107	RWZ4107	RWZ4104	
NSP	└ TRANS Unit	RWZ4115	RWZ4115	RWZ4115	

■ CONTRAST OF PCB ASSEMBLIES

MAIN Unit

RWZ4106 and RWZ4103 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		RWZ4106	RWZ4103	
	C467, C468	CCSQCH221J50	Not used	
	R508	RD1/4PU363J	Not used	
	R571, R572	RS1/10S163J	Not used	
	R573, R574	RS1/10S333J	Not used	
	R575, R576	RS1/10S683J	Not used	

SUBB Unit

RWZ4107 and RWZ4104 have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		RWZ4107	RWZ4104	
	S1530, S1533	VSG1010	Not used	

■ PCB PARTS LIST FOR CT-W616DR/KUXJ

Mark	No.	Description	Parts No.
	A MAIN UNIT		
	SEMICONDUCTORS		
	IC2511		AK7712-VQ
	IC591		AK93C45
	IC301, IC601, IC701, IC751		BA15218N
	IC202, IC203		BU4066BC
	IC101		CXA1115BP
	IC201		CXA1562S
	IC551		M62354GP
⚠	IC1001, IC1002		NJM7812FA
⚠	IC1003, IC1004		NJM78M05FA
	IC501		PD5391A
	IC2531		TC7WU04F
	IC451		UPC1297CA
	Q1001, Q801, Q851		2SA1309A
	Q805, Q855		2SB1238X
	Q803, Q853		2SB1425
	Q1003, Q571, Q572, Q807, Q857		2SC1740S
	Q401, Q402		2SC1815
	Q301, Q302, Q403, Q751, Q752		2SD2144S
	Q161, Q162		2SK373
	Q1004, Q165, Q451		KRA102M
	Q771, Q772		KRA111M
	Q1002, Q201–Q204, Q207, Q210		KRC103M
	Q452, Q804, Q806, Q854, Q856		KRC103M
	Q902		KRC103M
	Q101–Q108, Q163, Q164, Q166		KRC111M
	Q802, Q852		KRC111M
⚠	D1005, D1007		1SR35-100AVL
	D1002–D1004, D161, D162		1SS254
	D2201–D2204, D301–D304		1SS254
	D901–D903, D908–D910		1SS254
	D771		MTZJ3.9B
⚠	D1006, D1008		MTZJ5.6B
⚠	D1001		S2VB20
	D801, D851		S5688G
	COILS AND FILTERS		
	L402		LFA121K
	L401		RTD1052
	L451, L452 (4.6 mH)		RTD1053
	L101, L102 (5.6 mH)		RTF1099
	L301, L302 (10 mH)		RTF1102
	F201, F202		RTF1217
	CAPACITORS		
	C453, C454		CCCSL271K2H
	C161, C162		CCSQCH100D50
	C109–C112, C455, C701, C702		CCSQCH101J50
	C785, C786		CCSQCH121J50
	C2531, C2532		CCSQCH180J50
	C467, C468		CCSQCH221J50
	C107, C108		CEANL101M10
	C1013, C115, C116, C211, C212		CEAS100M50
	C217, C218, C2514, C2516, C2519		CEAS100M50
	C2521, C307, C308, C465		CEAS100M50
	C607, C608, C783, C784		CEAS100M50
	C605, C606		CEAS101M16
	C201, C202, C205, C206		CEAS1R0M50
	C2201, C2202, C241, C242		CEAS1R0M50
	C309, C310, C707, C708		CEAS1R0M50
	C757, C758		CEAS1R0M50
	C1014		CEAS220M16
	C781, C782		CEAS220M50
	C1015		CEAS221M35
	C406, C407, C705, C706		CEAS330M16
	C1011, C1012, C1019, C1028		CEAS331M16
	C1017, C119, C121, C219, C220		CEAS470M16
	C2225, C2226, C305, C408, C501		CEAS470M16
	C552, C602, C704, C759		CEAS470M16
	C303, C304, C469, C470		CEAS4R7M50
	C456		CEASR22M50
	C221, C222		CFTXA103J50
	C207, C208		CFTXA104J50
	C209, C210		CFTXA683J50
	C601, C771, C901, C902		CKCYF103Z50
	C1005, C1006, C1008, C1020–C1024		CKCYF473Z50
	C1027, C1029, C711, C903		CKCYF473Z50
	C751, C752, C801, C851		CKSQYB102K50
	C463, C464, C505		CKSQYB103K50
	C101, C102, C301, C302		CKSQYB221K50
	C459, C460		CKSQYB223K50
	C2205, C2206, C403–C405		CKSQYB332K50
	C125, C126		CKSQYB391K50
	C103, C104		CKSQYB471K50
	C457, C458		CKSQYB473K50
	C123, C124		CKSQYB561K50
	C105, C106		CKSQYB681K50
	C461, C462		CKSQYB821K50
	C120, C128, C502–C504, C551		CKSQYF103Z50
	C591		CKSQYF103Z50
	C2511, C2513, C2515, C2517		CKSQYF104Z25
	C2522–C2525, C2527, C2528		CKSQYF104Z25
	C2533		CKSQYF473Z50
	C402		CQMA223J50
	C113, C114		CQMA822J50
	C401		CQPA682J2A
	C1010		DCH1063
	C451, C452 (430 pF/500 V)		RCG1005
	C1018		RCH1148
	RESISTORS		
	R504		RA8T223J
	R221, R222 (560 Ω, 1/6 W)		RCN1024
	R401		RD1/2LMF1R0J
	R405		RD1/2LMF330J
	R404		RD1/2LMF5R6J
⚠	R1011		RFA1/4PL470J
	R211, R212		RS1/10S0R0J
	R2519		RS1/10S101J
	R303, R304, R406		RS1/10S102J
	R210, R309, R310, R765, R766		RS1/10S103J
	R311, R312, R315, R316, R518		RS1/10S104J
	R703, R704, R779–R782		RS1/10S104J
	R161–R164, R2531		RS1/10S105J
	R231, R232		RS1/10S112J
	R402, R403, R763, R764		RS1/10S123J
	R107, R108		RS1/10S151J
	R515, R516		RS1/10S152J
	R723, R724		RS1/10S153J
	R111, R112, R571, R572		RS1/10S163J

Mark	No.	Description	Parts No.
	R705–R708		RS1/10S184J
	R305, R306		RS1/10S202J
	R209		RS1/10S203J
	R120, R2533, R408, R717, R718		RS1/10S222J
	R453, R454, R591, R701, R702		RS1/10S223J
	R451, R452		RS1/10S224J
	R109, R110		RS1/10S273J
	R2217–R2220		RS1/10S301J
	R233, R234		RS1/10S302J
	R307, R308		RS1/10S303J
	R115, R573, R574		RS1/10S333J
	R101, R102, R105, R106		RS1/10S334J
	R2532, R751, R752		RS1/10S471J
	R165, R2229, R2230, R407		RS1/10S473J
	R103, R104		RS1/10S514J
	R575, R576		RS1/10S683J
	R235, R236, R301, R302		RS1/10S822J
	R609–R612		RS1/10S823J
	R1014		RS1LMF102J
	R607		RS1LMF221J
	VR851 (2.2 kΩ)		RCP1019
	VR801, VR852 (1.0 kΩ)		RCP1044
	VR101–VR104 (10 kΩ)		RCP1045
	VR701 (5 kΩ-A)		RCV1089
	Other Resistors		RD1/4PU□□□J
OTHERS			
	CN1501	33P FFC CONNECTOR	52045-3345
	JA701	PIN JACK (4P)	AKB7014
	CN401	KR CONNECTOR	B2B-PH-K-S
	CN101, CN151	KR CONNECTOR 3P	B3B-PH-K-S
	JA901	MINI JACK	PKN1005
	JA601	HEADPHONE JACK	RKN1002
	JA911, JA912	REMOTE CONTROL JACK	RKN1004
		PCB BINDER	VEF1008
		GROUND PLATE	VNF-091
	X501	(8.389MHz)	RSS1042
	X2531	(18.432MHz)	RSS1052

C SUBB UNIT

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	Q1501		KRC111M
	D1505–D1513		1SS254
	D1515		MBG5074X
SWITCHES AND RELAYS			
	S1501–S1505, S1509–S1516		VSG1010
	S1518, S1519, S1522, S1523		VSG1010
	S1525, S1526, S1528–S1531, S1533		VSG1010
	S1535		VSG1010
CAPACITORS			
	C1501		CKSQYB221K50
RESISTORS			
	All Resistors		RD1/4PU□□□J
OTHERS			
	CN1502	33P FFC CONNECTOR	52044-3345
	V1501	FL TUBE	RAW1157

Mark	No.	Description	Parts No.

B TRANS UNIT

Mark	No.	Description	Parts No.
OTHERS			
	H1–H4	FUSE CLIP	AKR1004

6. ADJUSTMENT

● Adjustment points and Measurement points are shown in Fig. 6–6.

6.1 MECHANICAL ADJUSTMENT

6.1.1 Door Damping Check and Adjustment

Set the door spring of the DECK I side to position (A) as shown in Fig. 6–1. Then, erect the front panel assembly vertically.

Open the doors of DECK I and DECK II at thw same time. At this point, confirm that the difference between the door completely opened and the other door is within 15 mm. If this standard is not satisfied install the door spring of DECK I at another position and adjust as follows:

● When the door of DECK I opens later than that of DECK II:
Change the door spring of DECK II from (A) to (B).

● When the door of DECK I opens faster than that of DECK II:
Change the door spring of DECK I from (A) to (B).

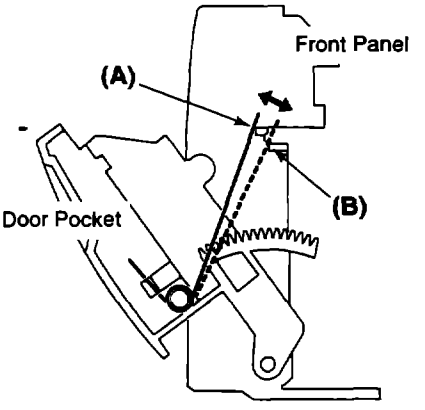


Fig. 6–1

6.1.2 Tape Speed Adjustment

● Perform this adjustment in the test mode.

● Test Mode Setting

(1). Press the TIME/COUNT and RESET keys of DECK I together with the PAUSE key of DECK II.
(2). The speed becomes normal when the PLAY key is pressed, and double when the FF key is pressed.
(3). To cancel the TEST mode, press the RESET key of DECK I or turn off the power.

No.	DECK	Mode	Test Tape	Adjusting Point	Specifications/Ratings (Playback Frequency)	Remarks
1	I	Double Speed PLAY	STD–301 (3 kHz) or NCT-111	Check	5100 Hz ±510 Hz	
2	II			VR851	Within ±10 Hz against the measurement value of the step 1 (DECK I).	
3	I	Normal Speed PLAY		VR801	2980 Hz ±5 Hz	
4	II			VR852	Within ±5 Hz against the measurement value of the step 3 (DECK I).	

6.2 ELECTRICAL ADJUSTMENT

Adjustment Conditions

(1). The mechanical adjustments must be completed first.
(2). The head must be cleaned and demagnetized.
(3). Turn the power on allow the deck to warm up for at least a few minutes before commencing any electrical adjustments.
(4). The reference signal is 0 dBV = 1 Vrms.
(5). Connect a10 kΩ load resistance to the OUTPUT terminals.
(6). Unless otherwise specified, the switches listed below are left in the positions indicated.
DOLBY NR : OFF
TAPE SELECTOR : NORM

Test Tape

STD–331E : Playback adjustment (See Fig. 6–2)
STD–632 : NORMAL blank tape
STD–622 : CrO2 blank tape
STD–611 : METAL blank tape

* As the reference recording level is 250 nwb/m for STD–331E, the recording level will be higher by 4 dB for STD–331B (160nwb/m). When adjusting, pay carefull attention to the type of tape used.

List of Adjustments

■ Playback Section

(1). Head Azimuth Adjustment
(2). Playback Level Adjustment

■ Recording Section

(1). Bias Oscillator Adjustment
(2). Recording Bias & Recording Level Automatism Adjustment
(3). Level Meter Check

NOTE: This unit has an automatic tape selection feature.

Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.
"DOLBY", the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.

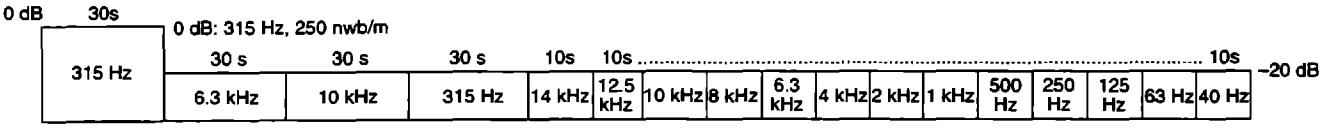


Fig. 6–2 Constants of the Test Tape STD–331E

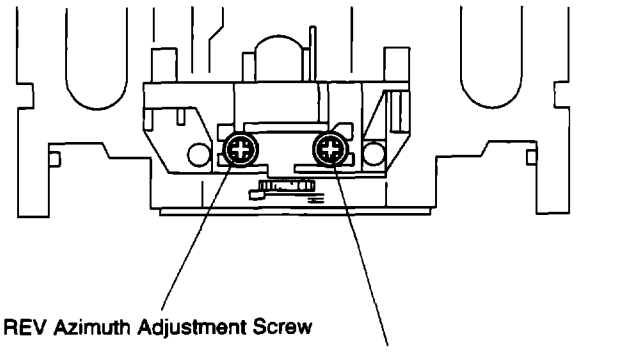


Fig. 6–3 Head Azimuth Adjustment

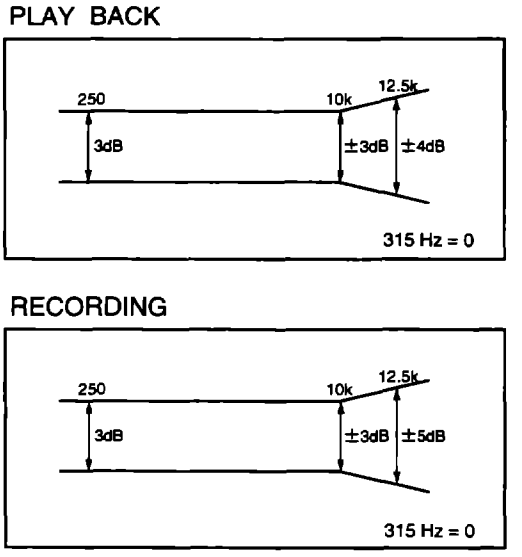


Fig. 6–4 Frequency Response Zone

6.2.1 Playback Section

(1). Head Azimuth Adjustment

● Turn VR101, VR102 (DECK I) or VR103, VR104 (DECK II) to mechanical center positions.

No.	Mode	Input Signal & Test Tape	Adjustment Location	Measurement Location	Adjustment Value	Remarks
1	PLAY	Play the 10 kHz/–20 dB section of STD–331E test tape.	Head azumuth adjustment screw (See Fig. 6–3)	LINE OUT	Maximum playback signal level	
2	STOP	Lock the screw with silicon bond after completing adjustment.				

(2). Playback Level Adjustment

● This adjustment determines the DOLBY NR level, and must be performed with great care.

No.	Mode	Input Signal & Test Tape	Adjustment Location		Measurement Location	Adjustment Value	Remarks
1	PLAY	Play the 315 Hz/0 dB section of the STD–331E test tape.	DECK II	VR103 (L ch) VR104 (R ch)	TP 1 (L ch) TP 2 (R ch)	–6.7 dBV	Digital NR: OFF
			DECK I	VR101 (L ch) VR102 (R ch)			

6.2.2 Recording Section

(1). Bias Oscillator Adjustment

No.	Mode	Input Signal & Test Tape	Adjustment Location		Measurement Location	Adjustment Value	Remarks
1	REC	Load the STD–611 test tape with no input signal.	DECK II	L401	TP 11	107 kHz ± 0.3 kHz	If the adjustment value on the left cannot be obtained values within $107\text{kHz}^{+2.3}_{-0.3}$ kHz are also satisfactory.

(2). Recording Bias & Recording Level Automatism Adjustment

REC Adjustment Check

1. Test tape DECKII STD–632 set in.
2. Test mode setting.

① Press the test mode, set both TIME/COUNT and RESET keys of DECK I together with the PAUSE key of DECKII all together.

⇩

② Set [COPY START] key is press push.

⇩

③ When the REC key (DECKII) is pressed, " B " flashes on the counter, and adjustment of bias and recording level is started automatically.

- When correct adjustment has been completed, the mechanism stops for about 50 seconds, and " PBR " lights on the DECKII side counter to indicate that all adjustments have been completed.
- At this time, flashing of "B" indicates a bias adjustment error, while flashing of "R" indicates a recording level error.

⇩

④ With correct adjustment, " PBR " lights on the DECKII side of the counter. When the DECKII side counter does not light, no adjustment value is written into the memory.

⇩

⑤ When the STOP key is pressed, the automatic adjustment mode is cancelled. At this time, the counter display becomes "10" on the DECK I side and " TUNE " on the DECKII side. (See Fig. 6–5)

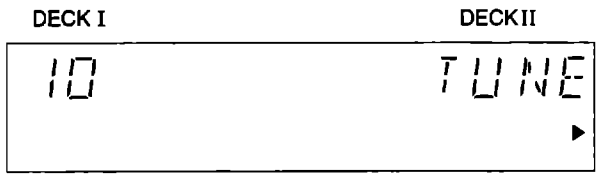


Fig. 6–5 FL Display Example

⇩

⑥ Press the RESET Key at the DECK I , Canceling the test mode.

Adjustment NG: The following are possible reasons.

- No recording
- No adjustment tape. Near the tape end.
- Tape is extremely damaged.
- Circuit trouble (defective contact etc.)

Note: For repeat adjustment, press the STOP key (DECKII) to leave automatic adjustment mode, and then start again.

(3). Level Meter Check

No.	Mode	Input Signal & Test Tape	Adjustment Location	Measurement Location	Adjustment Value	Remarks
1	REC PAUSE	Apply a 315 Hz/–6 dBV (500 mV) signal to the LINE INPUT terminals.	REC level control volume	TP 1 (L ch) TP 2 (R ch)	Check that the level meters "0 dB" light up within –7.2 dBV ± 2 dB of the signal output level.	

MAIN Unit

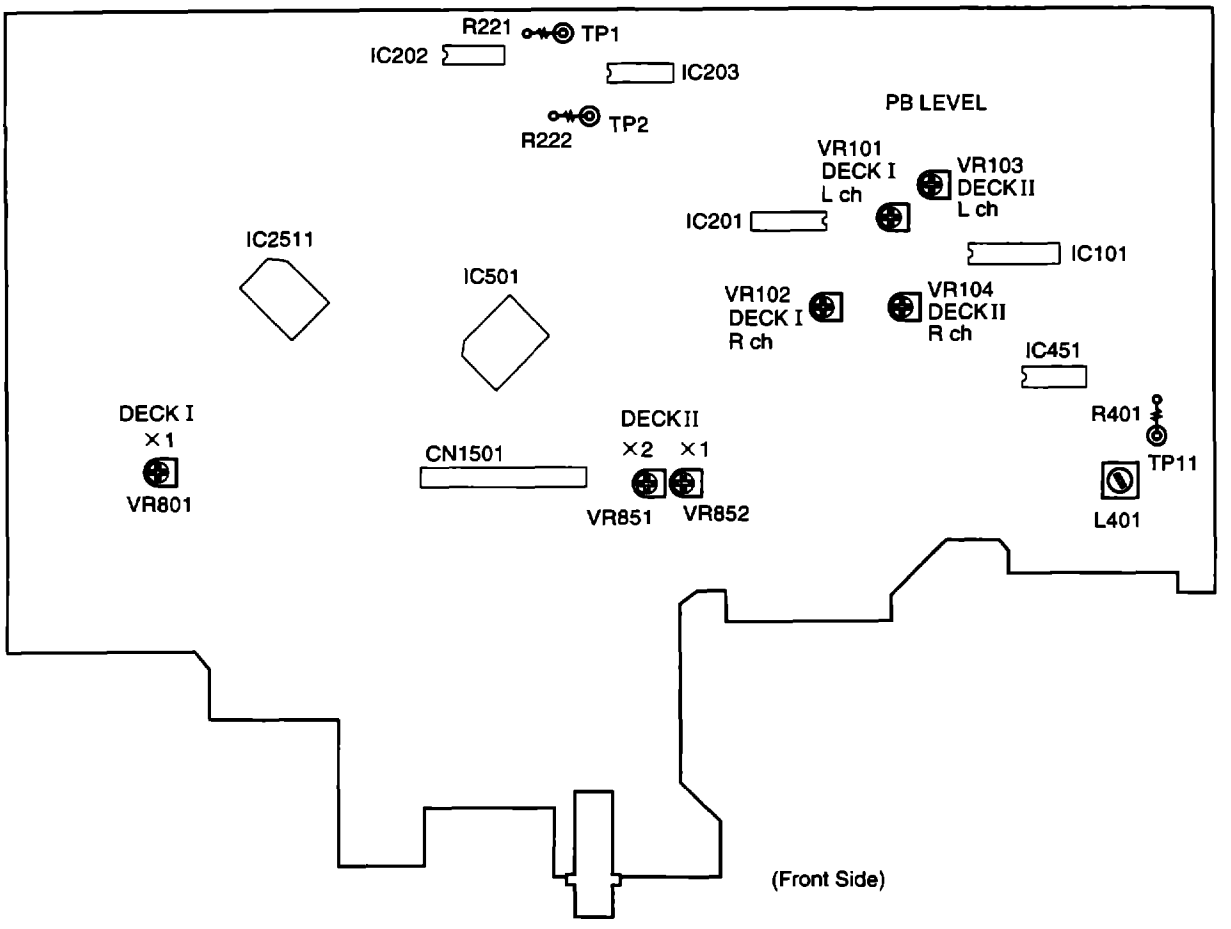


Fig. 6–6 Adjustment Points and Measurement Points

7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

■ PD5391A (IC501: MAIN UNIT)

● System Control Micro-computer

● The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

● Pin Function

No.	Name	I/O	Description
1	SW1	I	The terminals 1 and 2 use the internal ADC to convert the analog input from the SW input terminals to digital data.
2	SW0	I	
3	1CLOSE	O	Cassette door control terminal During Door open: OPEN="H", CLOSE= "L" During Door close: OPEN="H", CLOSE= "L"
4	1OPEN	O	
5	2CLOSE	O	
6	2OPEN	O	
7	2×1	O	Speed control terminal for the mechanism on side 2. Normally, "H" is put out, and "L" is put out at the time of high-speed copying.
8	SCLK	O	DSP (IC2511) communication "SCLK" terminal
9	SO	O	DSP (IC2511) communication "SO" terminal
10	SI	I	DSP (IC2511) communication "SI" terminal
11	RDY	I	DSP (IC2511) communication "RDY" terminal (Not used)
12	DRDY	I	DSP (IC2511) communication "DRDY" terminal (Not used)
13	RQB	O	DSP (IC2511) communication "RQB" terminal
14	CS	O	DSP (IC2511) communication "CS" terminal
15	RST	O	DSP (IC2511) communication "RST" terminal
16	PDB	O	DSP (IC2511) communication "PDB" terminal
17	CDIN	I	CD synchro, Control signal input from CD.
18	CDJC	I	CD synchro, Code detection signal input
19	DOL0	O	DOLBY position control terminals
20	DOLB	O	
21	2SOL	O	Mechanism 2 solenoid terminal. "H" output at the time of mechanical assistance.
22	2CPM	O	Mechanism 2 capstan motor terminal. "H" output during operation of the mechanism.

	DOLB	DOL0
OFF	L	H
B	H	L
C	L	L

No.	Name	I/O	Description
23	METR	O	Bias control terminal. "OPEN" status at the time of TYPE IV tape recording.
24	LMUT	O	Line output mute terminal. MUTE with "L" output
25	BIAS	O	Bias control terminal. "H" output at the time of recording.
26	2PB	O	Switching playback terminal. "H" output at the time of 2 side playback.
27	XL22	O	XD control terminal At the time of XD OFF recording, all ports are open, and at the time of XD ON recording, they are open or "L" output is executed according to the input signal.
28	XL21	O	
29	XL20	O	
30	XR22	O	
31	XR21	O	
32	XR20	O	
33	REMT	I	SR input terminal. "H" when there is no input.
34	POFF	I	Power OFF detection signal input terminal. Power OFF processing is executed with "H" input.
35	REST	I	Reset signal input terminal. Reset status is reached with "L" input, and each output port becomes open.
36	XCIN	I	Sub clock input terminal (Not used)
37	XCOUT	I	
38	XIN	I	Clock input terminal
39	XOUT	I	
40	Vss	I	Connected to GND.
41	NORR	O	Bias control terminal. "L" output at the time of TYPE I tape recording.
42	RMUT	O	REC output mute terminal. Muting with "L" output.
43	DEC	O	DOLBY IC (IC201) encode/decode switching terminal. "H" output at the time of decoding.
44	PBNR	O	"H" output at the time of TYPE I tape playback.

No.	Name	I/O	Description
45 | 48	KEY3 | KEY0	I	Key scan input terminal
49	DIM	I	Memory (IC591) communication data input terminal
50	DATD	O	Memory (IC591) communication data output and bias control DAC (IC551) communication data output terminal.
51	CLKD	O	Memory (IC591) communication data output and bias control DAC (IC551) communication CLK output terminal
52	CSM	O	Memory (IC591) communication CS output terminal
53	OUTD	O	DAC (IC551) for bias control communication, enable output terminal.
54	1×1	O	Speed control terminal for the mechanism on side I. Normally, "H" is put out, and "L" is put out at the time of high-speed copying.
55	METL	O	Bias control terminal. "OPEN" status at the time of TYPE IV tape recording.
56	NORL	O	Bias control terminal. "L" output at the time of TYPE I tape recording.
57 | 66	G10 | G1	O	FL display segment output and key scan output
67 | 80	P14 | P1	O	FL display segment output and key scan output
81	NC	O	OPEN
82	LDS0	O	DIGITAL IND (LED) control terminal. ON with "H".
83	LSTB	O	Connected to GND through a resistor.
84	TOCD	O	CD synchro. Output terminal for the control signal to the CD.
85	1SOL	O	Mechanism 1 solenoid terminal. "H" output at the time of mechanical assistance.
86	1CPM	O	Mechanism 1 capstan motor terminal. "H" output during operation of the mechanism.

No.	Name	I/O	Description
87	ASE2	O	Line Input/Output selection terminal
88	ASE3	O	

	ASE2	ASE3
Playback	H	L
Recording, Copy	L	H

No.	Name	I/O	Description
89	VEE	I	Power supply for the built-in resistance drive of the FL drive terminals (terminals 57 to 80). Connect to –21 V.
90	2SEN	I	2 mechanism unit reel sensor input terminal
91	Vcc	I	Connected to +5V.
92	1SEN	I	1 mechanism unit reel sensor input terminal
93	AVss	I	Built-in ADC power supply terminal Connected to GND.
94	VREF	I	Built-in ADC power supply terminal Connected to +5V.
95 | 100	SW7 | SW2	I	Each SW input terminal Conversion of analog input to digital data by the built-in ADC.

■ AK7712-VQ (IC2511: MAIN UNIT)

● DSP

● Pin Function

No.	Name	I/O	Description
1 | 3			
4	OPCL	I	Built-in ADC, DAC connection selection terminal. Connection with "L".
5	PDADB	I	Built-in ADC reset input terminal. "L" input.
6	PDDAB	I	Built-in DAC reset input terminal. "L" input.
7	PDB	I	Power-down terminal. "L" input only at the time of power ON.
8	RST	I	Reset terminal. "L" input other than at the time of PLAY and REC.
9 | 11			
12	DVB	I	Connected to +5V (digital).
13 | 20			
21	SMODE	I	Master/slave mode switching. "H" input.
22 | 24			
25	DVDD	I	Connected to +5V (digital).
26	DVSS	I	Connected to GND (digital).
27			
28	XTI	I	Connected to Crystal resonator (18.432 MHz).
29	XTO	O	
30			
31	CS	I	Microcomputer (PD5391A) communication "CS" terminal
32	RQB	I	Microcomputer (PD5391A) communication "RQB" terminal
33	DVSS	I	Connected to GND (digital).
34	DVDD	I	Connected to +5V (digital).
35	SCLK	I	Microcomputer (PD5391A) communication "SCLK" terminal.

No.	Name	I/O	Description
36	SI	I	Microcomputer (PD5391A) communication "SO" terminal. Connected to "SI" of the microcomputer.
37	DRDY	O	Microcomputer (PD5391A) communication "DRDY" terminal. (Not used)
38	WRDY	O	Microcomputer (PD5391A) communication "WRDY" terminal. (Not used)
39	SO	I	Microcomputer (PD5391A) communication "SO" terminal. Connected to "S1" of the microcomputer.
40 | 50			
51	DVSS	I	Connected to GND (digital).
52	DVDD	I	Connected to +5V (digital).
53 | 70			
71	DVSS	I	Connected to GND (digital).
72	DVDD	I	Connected to +5V (digital).
73			
74	DVSS	I	Connected to GND (digital).
75	DVDD	I	Connected to +5V (digital).
76	DVB	I	Connected to +5V (digital).
77			
78 | 80			
81	AVDD	I	Connected to +5V (analog).
82	AOUTR2	O	Analog 2 "R ch" output (LINE output)
83	AOUTL2	O	Analog 2 "L ch" output (LINE output)
84	AOUTR1	O	Analog 1 "R ch" output (REC AMP output)
85	AOUTL1	O	Analog 1 "R ch" output (REC AMP output)
86	VRDAL	I	DAC power supply. Connected to GND (analog).
87	AVSS	I	Connected to GND (analog).

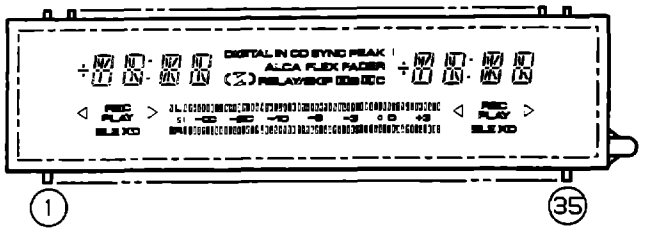
No.	Name	I/O	Description
88	AVB	I	Connected to +5V (analog).
89	VRDAH	I	DAC power supply. Connected to +5V (analog).
90			
91	AIR-	I	Analog "Rch" input. (Reversed input)
92	AIR+	I	Analog "Rch" input. (Not reversed input)
93	AIL-	I	Analog "Lch" input. (Reversed input)
94	AIL+	I	Analog "Lch" input. (Not reversed input)
95	VCOM	I	Common ground pin. Insert a 0.1 μ and 10 μ capacitor between this pin and analog ground.
96	VRADL	I	ADC power supply. Connected to GND (analog).
97	AVSS	I	Connected to GND (analog).
98	AVDD	I	Connected to +5V (analog).
99	VRADH	I	ADC power supply. Connected to +5V (analog).
100	AVB	I	Connected to +5V (analog).

7.1.2 DISPLAY

■ RAW1157 (V1501: SUBB UNIT)

● FL Tube

● Pin Assignment

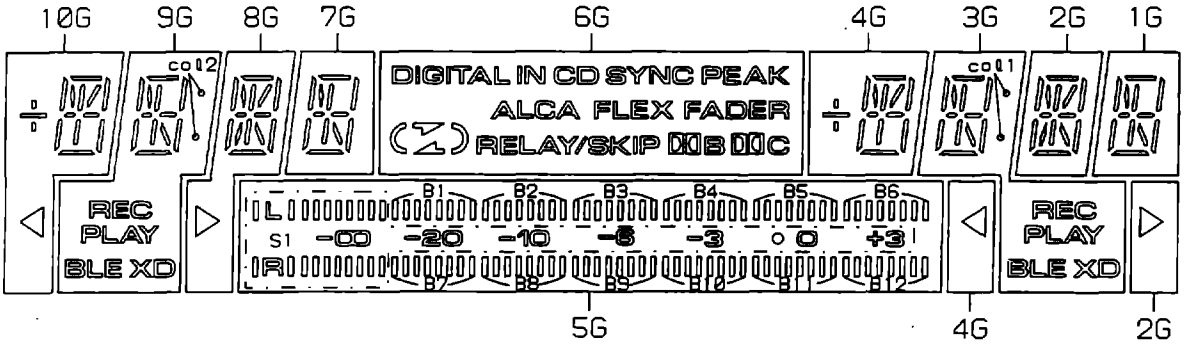


NOTE 1) F1,F2 - Filament
2) NP ---- No Pin
3) NC ---- No connection
4) DL ---- Datum Line
5) 1G~10G-- Grid

● Pin Connection

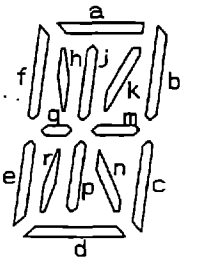
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
CONNECTION	F1	F1	NP	NC	P1	P2	P3	P4	P5	P6	P7	NC	P8	P9	P10	P11	P12	P13	P14	NC	NC	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	NC	NC	NP	F2	F2

● Grid Assignment



● Anode Connection

	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	DIGITAL	B1	a	a	a	a
P2	b	b	b	b	IN	B2	b	b	b	b
P3	f	f	f	f	CD	B3	f	f	f	f
P4	g	g, m	g	g	SYNC	B4	g	g, m	g	g
P5	c	c	c	c	PEAK	B5	c	c	c	c
P6	e	e	e	e	FADER	B6	e	e	e	e
P7	d	d	d	d	FLEX	S1	d	d	d	d
P8	j, p	j, p	j, p	j, p	ALCA	-	j, p	j, p	j, p	j, p
P9	m	col2	m	m	DOLBY B	B7	m	col1	m	m
P10	h	h, n	h	h	DOLBY C	B8	h	h, n	h	h
P11	k	REC	k	-	☾	B9	k	REC	k	-
P12	▯ ▯	PLAY	n	n	⇄	B10	▯ ▯	PLAY	n	n
P13	—	BLE	r	-	☽	B11	—	BLE	r	-
P14	◁	XD	▷	-	RELAY/SKIP	B12	◁	XD	▷	-



(10G~7G,4G~1G)

7.2 TEST MODE

7.2.1 Entering the Test Mode

While both mechanisms are stop, press the TIME/COUNT, RESET keys of DECK I and PAUSE key of DECKII together to enter the test mode. (Refer to Fig. 1)

7.2.2 Exiting the Test Mode

- Press the RESET key of DECK I.
- Press the STANDBY key.
- Turn off the power.

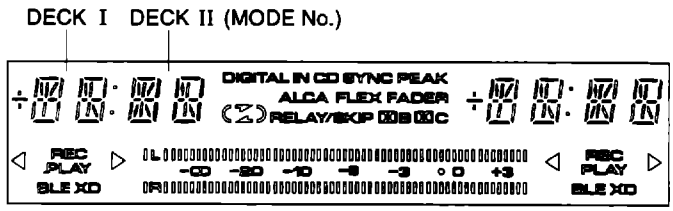
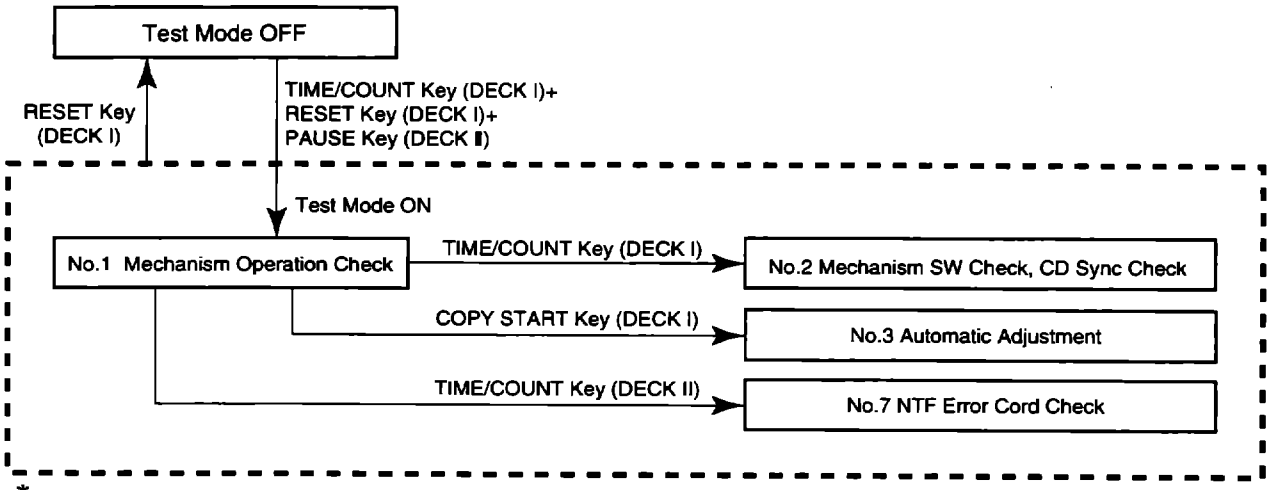


Fig. 1 FL Display Example

7.2.3 Shifting to Test Mode State


Test Mode OFF
RESET Key (DECK I)
TIME/COUNT Key (DECK I)+
RESET Key (DECK I)+
PAUSE Key (DECK II)
Test Mode ON
No.1 Mechanism Operation Check
TIME/COUNT Key (DECK I)
No.2 Mechanism SW Check, CD Sync Check
COPY START Key (DECK I)
No.3 Automatic Adjustment
TIME/COUNT Key (DECK II)
No.7 NTF Error Cord Check

* During the test mode, pressing the STOP key (DECK I or DECKII) will set test mode No. 1.

7.2.4 Main Test Mode Items

Test mode No.1 ..... Mechanism Operation Check
Test mode No.2 ..... Mechanism SW Check, CD Sync Check
Test mode No.3 ..... Automatic Adjustment
Test mode No.7 ..... NTF Error Cord Check

7.2.5 Test Mode No. 1 (Mechanism Operation Check)

■ Operations specifications

DECK I Display	DECKII Display	Input Key	Adjustment and Check
10	(TUNE)	STOP FWD REV FF REW REC PAUSE MUTE COPY MODE COPY START	◇ The mechanism operates without the half in this mode. ◇ Test speed adjustment · During PLAY (except in assisting), when FF or REW key is pressed, ×2 speed PLAY is set. · During ×2 speed PLAY, when FF or REW key is pressed, constant speed PLAY is set. ◇ Auto stop check · Sets RELAY ON forcibly. However no relay during REC. · Even at tape end directly after PLAY, the auto stop time is 1 second. (Normally 4 seconds) · Reverse operations are normally performed.

When automatic adjustment has been completed, "TUNE" lights on the DECKII counter.

7.2.6 Test Mode No. 2 (Mechanism SW Check, CD Sync Check)

■ Entering the Mechanism SW check mode

Press the TIME/COUNT key.

■ Exting the Mechanism SW check mode

When the STOP key (DECK I or DECK II) is pressed, test mode No. 1 is set.

■ Operations specifications

DECK I Display	DECKII Display	Input Key	Line Mute	REC Mute	Bias	Adjustment and Check
20			ON	ON	OFF	◇ SW check · When there is a half, each counter shows "H" at the second digit from the left. · Accidental erasure detection check FWD recordable: " ► " lights up (DECK II) REV recordable: " ◄ " lights up (DECK II) · Tape type check When there is a tape, display is made at the first digit from the left on the counter. NORMAL TAPE : " n " CrO_2 TAPE : " C " METAL TAPE : " M "
		CD SYNC				◇ CD sync check When the cord whose input and output are short-circuited is connected, and the CD SYNCHRO key is pressed, " CD SYNC " display lights up.

7.2.7 Test Mode No. 3 (Automatic Adjustment)

For details, refer to " 6. ADJUSTMENT".

DECK I Display	DECKII Display	Input Key	Adjustment and Check
PBR	PBR	STOP FWD REV REC	① Press the COPY START key to enter the test mode. ② When the REC key (DECKII) is pressed. ④ Execute adjustment of recording bias and recording level. ⑤ When all adjustments have been completed, "PBR" lights on the DECKII side counter. ⑥ When the STOP key (DECK I or DECKII) is pressed, test mode No. 1 is set.

7.2.8 Test Mode No. 7 (NTF Error Code Check Mode)

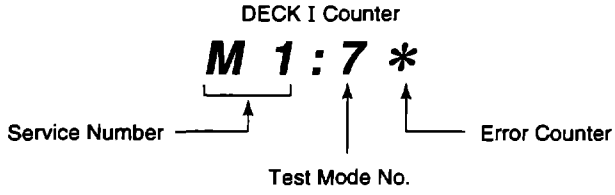
■ Entering the NTF error code check mode

Press the TIME/COUNT key of DECKII.
When pressed again, the counter changes as follows.
1 ⇨ 2 ⇨ 3 ⇨ 1

■ Exting the NTF error code check mode

- When the STOP key (DECK I) is pressed, test mode No. 1 is set.
- When repair has been completed, reset the recorded error. (Press the STOP key, and press the TIME/COUNT key (DECK I) and the MUTE key (DECKII) immediately after entry into test mode.)

■ NTF error code check mode display



■ Operations specifications

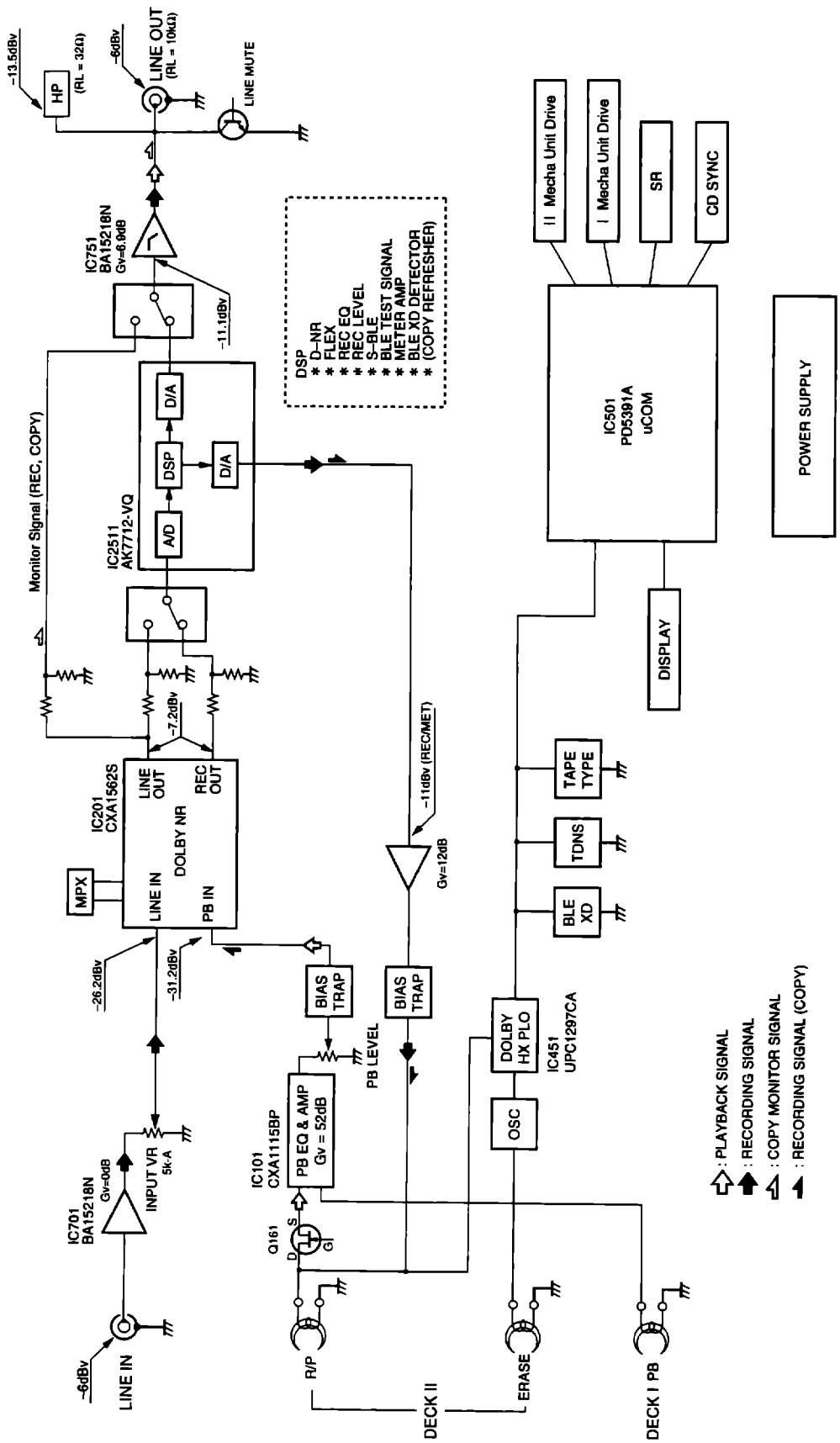
Error Location	Service No.	State of Unit	Cause
BLE	B1 (DECKII) B3 (DECK I)	BLE Adjustment Error	· The take-up side reel table stops during BLE operations. · The sensor at the reel table is faulty. · Tape end is set.
	B2 (DECKII) B4 (DECK I)	BLE Adjustment Error	· The signals were not recorded during BLE operations.
Mechanism	M3	DECK I is locked	· The mechanism and the half are engaged in DECK I .
	M4	DECKII is locked	· The mechanism and the half are engaged in DECK II.

* B3 and B4 on the DECK I side and B1 and B2 on the DECK II side light for the error No. of BLE errors.

■ Resetting the error code

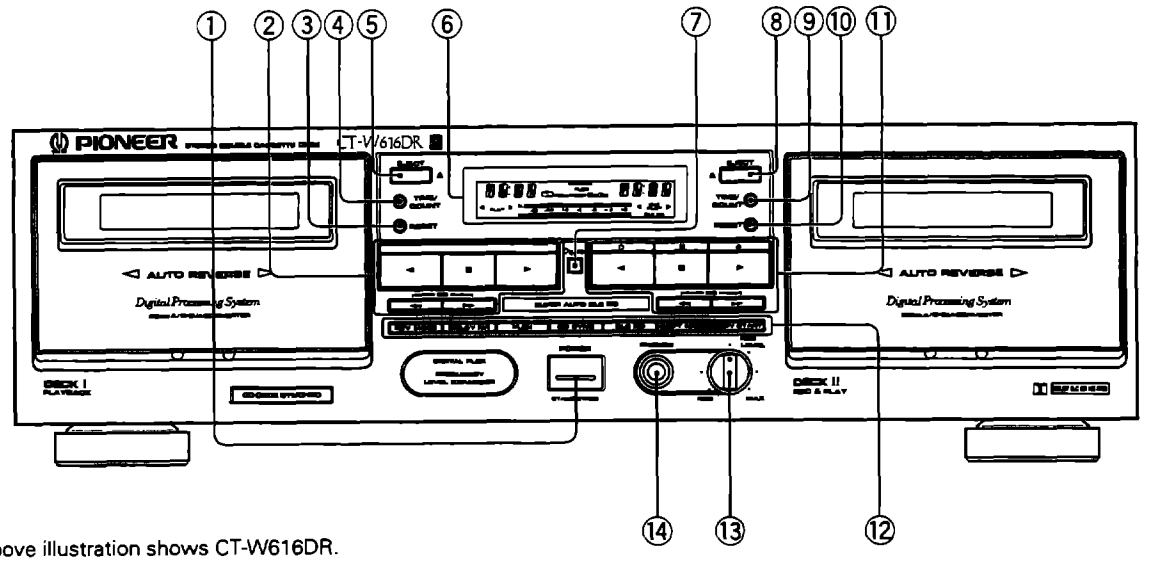
To reset, press the TIME/COUNT key of DECK I and MUTE key of DECK II together.

7.3 BLOCK DIAGRAM



8. PANEL FACILITIES AND SPECIFICATIONS

■ PANEL FACILITIES



● The above illustration shows CT-W616DR.

① **STANDBY/ON switch**
The STANDBY/ON switch activates the secondary transformer only.
Even when the switch is in the STANDBY position, there will be a power flow to the deck's circuits as long as the power cord is connected to a power outlet.

② **DECK I operation buttons**
◄ : Reverse playback
■ : Stop
► : Forward playback
◄◄/MS : Fast reverse/music search
►►/MS : Fast forward/music search

③ **DECK I counter reset button (RESET)**

④ **DECK I counter mode button (TIME/COUNT)**

⑤ **DECK I eject button (⏏)**
● If the tape is moving (playback, tape winding, etc.), press the stop (■) button before pressing this button.
NOTE:
If the power is turned off while the tape is moving, the cassette door may remain locked. In this case, turn the power on before pressing the eject (⏏) button.

⑥ **Function display**

⑦ **Digital indicator**
Turns off while the Digital-NR is OFF.

⑧ **DECK II eject button (⏏)**
● If the tape is moving (recording, playback, tape winding, etc.), press the stop (■) button before pressing this button.
NOTE:
If the power is turned off while the tape is moving, the cassette door may remain locked. In this case, turn the power on before pressing the eject (⏏) button.

⑨ **DECK II counter mode button (TIME/COUNT)**

⑩ **DECK II counter reset button (RESET)**

⑪ **DECK II operation buttons**
◄ : Reverse playback
■ : Stop
► : Forward playback
◄◄/MS : Fast reverse/music search
►►/MS : Fast forward/music search
O : Recording mute
II : Pause
● : Recording

⑫ **REV MODE button**
DOLBY* NR button (OFF/B/C)
*
● *Dolby noise reduction and HX Pro headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Pro originated by Bang & Olufsen.*
● *"DOLBY", the double-D symbol and "HX PRO" are trademarks of Dolby Laboratories Licensing Corporation.*
FLEX button (Except for U.S. model of CT-W606DR)
CD-DECK SYNCHRO recording button (CD SYNC).
BLE XD button (Except for U.S. model of CT-W606DR)
COPY MODE button
NOR : Normal speed copy.
HI : High speed copy.
TDNS : TDNS copy (Normal speed copy).
COPY START button

⑬ **Recording level control (REC LEVEL)**

⑭ **Headphones jack (PHONES)**

■ SPECIFICATIONS

System ..... 4-track, 2-channel stereo
Heads ..... "Hard Permalloy" recording/playback head x 1
"Hard Permalloy" playback head x 1
"Ferrite" erasing head x 1
Motor ..... DC servo motor x 2
Wow and Flutter ..... 0.09% (WRMS)
±0.19% (DIN)
Fast Winding Time ..... Approximately 100 seconds (C-60 tape)
Frequency Response
–20 dB recording:
TYPE IV (Metal) tape ..... 20 to 20.000 Hz
TYPE II (High/CrO_2) tape ..... 20 to 19.000 Hz
TYPE I (Normal) tape ..... 20 to 18.000 Hz
Signal-to-Noise Ratio (when Digital NR ON)
Dolby B or C-type ON ..... 90 dB
Dolby OFF ..... 82 dB
(TYPE I, 3% 3rd H.D., Weighted.)
Harmonic Distortion ..... No more than 0.8%
(at –4 dB: 160 nwb/m)
Input (Sensitivity)
LINE (INPUT) ..... 100 mV (Input impedance 53 kΩ)
Output (Reference level)
LINE (OUTPUT) ..... 0.5 V (Output impedance 1.9 kΩ)
Headphones ..... 1.33 mW (Load impedance 32 Ω)

Miscellaneous

Power Requirements
U.S. model ..... AC 120 V, 60 Hz
U.K. and Australian models ..... AC 230~240 V, 50/60 Hz
Power Consumption
U.S. model ..... 17 W
U.K. and Australian models ..... 19 W
Dimensions ..... 420(W) x 125(H) x 250(D) mm
16-1/2 (W) x 4-15/16 (H) x 9-13/16 (D) in
Weight (without package)
U.S. and U.K., Australian models ..... 4.4kg (9 lb 11 oz)

Subfunctions

- Automatic reverse
- DOLBY HX PRO system
- DOLBY B/C type NR systems
- Music search up to ±15 selections
- Synchronized copy start
- High-speed and normal-speed copy (DECK I → DECK II)
- Relay playback/blank skip
- CD•DECK SYNCHRO recording capability
- Peak level meter with peak-hold function
- Automatic space recording mute
- Automatic tape selector
- SRI System remote control available
- 2-mode electronic 4-digit twin tape counter
- Headphone jack
- DIGITAL FLEX system (Frequency Level Expander) (Except for U.S. model of CT-W606DR)
- DIGITAL TDNS system (Tape Duplication Noise Suppressor)
- DIGITAL SUPER AUTO BLE XD system (Except for U.S. model of CT-W606DR)
- LAST MEMORY
- DIGITAL NR

Accessories

Operating instructions 1
Connection cord with pin plugs 2
SRI Remote control cord 1
CD•DECK SYNCHRO control cord 1

NOTE:

Specifications and design subject to possible modifications without notice, due to improvements.